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Selection of Cases.

The first point to which we wish to direct attention is the method of selection for X ray treatment. Not all cases are suitable for this treatment, and at first we had to feel our way with some caution. The points which bear upon selection are: (1) age of patient, (2) size of tumour (if a fibroid), (3) character of hæmorrhage, (4) degree of anæmia, (5) presence of complications, such as inflammatory disease of the appendages, degeneration of a fibroid tumour, &c.

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(3) *Hæmorrhage.*—The character of the hæmorrhage is important when it raises the suspicion of malignancy. If the type of menorrhagia is not maintained, and irregular or interval-bleeding is present, the uterus should be first explored to exclude carcinoma of the body.

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(5) *Complications.*—Only simple and uncomplicated cases are suitable for X rays. A careful examination of the cervix was made in every case, to exclude appearances suggestive of a malignant growth. The presence of pain is a symptom which requires careful investigation; tenderness or rapid increase in size of a fibroid suggest degenerative changes; limitation of mobility or the presence of a tender swelling on either side of the uterus, or on both sides, suggests inflammatory disease of the appendages. Any of these conditions, if present, render the case unsuitable.

It will therefore be evident that we have not used X rays as a general substitute for hysterectomy, but have, on the contrary, limited its application to carefully selected conditions; and the cases treated have, in fact, constituted only a small proportion of the cases of fibroid tumours and of chronic metritis which have come under our notice in the period under review. We hold strongly that the indiscriminate treatment of these conditions by X rays is a mistake; every case so treated should first be passed as suitable by a competent authority.

With regard to the cases classed as "chronic metritis," it must be said that in every instance the diagnosis was clinical only; if no marked enlargement or irregularity in outline of the uterus could be made out the local condition was for convenience labelled "chronic metritis." In many of the cases the diagnosis was supported by the fact that curetting had been previously performed without relief.

Technique.

The technique adopted in the majority of cases was a modification of that used in Krönig's clinic at Freiburg, the principle of which is the administration of massive doses of X rays in the shortest possible time commensurate with safety as regards the skin of the areas irradiated. In a few cases the total dose has been reduced by diminishing the number of areas irradiated at each treatment, and it is noteworthy that the cases so treated comprise the greater proportion of the failures in our series. They frequently showed a recurrence of hæmorrhage after a period varying in duration, of amenorrhœa. These two facts support the conclusion we have come to from our experience—namely, the importance of giving massive doses and the administration of the treatment for one or two sittings after amenorrhœa has been induced.

In describing the technique it is not intended to go into the details of the technical side of the running of an X ray tube. This part of the technique requires special knowledge, and a lengthy description of the various apparatus used in the successful manipulation of an X ray tube for deep-seated therapeutic purposes. We will therefore only deal with that part of the technique with which the clinician of to-day should be conversant.

The tubes used have been of the water-cooled variety, equipped with osmo regulators, by means of which the hardness of the tube can be regulated. They are maintained at a hardness of 8 to 9 Bauer with an equivalent spark-gap of 8 to 9 inches, with the passage of 2 to 3 milliampères through the tube circuit. The rays are filtered through a 3 mm. aluminium filter, which cuts off all but the hardest rays emitted from the tube. Further filtration is provided by placing between the aluminium filter and the part to be irradiated a loofah sponge enclosed in chamois leather, together with four layers of satrap paper, all of which are enclosed within a linen bag. These measures seem adequately to protect the skin from any injurious effects. The tube is fixed in a suitable stand, the box of which can be moved up and down and fixed at any required angle by manipulation. A wire connects the tube-stand to the earth.

The patient is placed on a suitable couch and the lower abdomen from the level of the umbilicus laid bare. Over this area eight or six square areas are marked out with a coloured pencil, which constitute eight or six ports of entry for the irradiations. Each area is irradiated separately, and is enclosed by two lead angles which are so placed that only the field to be irradiated is left exposed. Over that area is placed the linen bag containing the loofah sponge, chamois leather, &c., already mentioned. On the top of this is placed a sheet of lead rubber in which is cut a square window, and through this the rays pass to the exposed area of the abdomen. In the centre of this square area resting on the linen bag is placed a Kienböck photographic paper, a strip of bromide of silver paper, which when developed acts as a rough guide to the amount of X rays administered. The tube is now placed in position, the tube-box being adjusted in such a manner that the anticathode of the tube is in line with the centre of the square of the exposed area, and at such an angle that the rays pass down into the pelvis. Each area is irradiated for ten minutes.

This concludes the treatment given on the first day, for the remainder of which the patient is ordered to bed. On the following day, with the patient lying prone, four areas are marked out over the sacral and sacro-iliac regions, and each irradiated for ten minutes. The same protective measures, &c., are used as those described

when irradiating the abdominal areas. Each "treatment" comprising the exposures on the two consecutive days lasts some three to four hours and comprises one attendance on two consecutive days, the abdominal areas being irradiated on the first day and the sacral areas on the second day. The patient is ordered to bed after the treatment on the first day, but this is not necessary in the majority of cases following the sacral exposures.

An interval of three weeks is allowed to elapse between each treatment as a precautionary measure against injury to the skin. The time selected for administering the treatment should be shortly after the termination of a period. If given immediately before the onset of menstruation it is likely to increase the hæmorrhage rather than to diminish it, especially in the early treatments. The requisite number of treatments will be found to be from four to six, and one treatment at least should be given after amenorrhœa has been induced. Many factors, however, have a bearing on the number of treatments required, and in certain cases a modification of the technique here described may be advantageously adopted.

Dosage.

We now come to the important consideration of the estimation of dosage.

It will have been observed in the summary of the cases no mention of dosage has been made, but that in its place the total time exposure of each case has been given. The reason for this is that none of the many methods devised for the estimation of dosage possess even approximate accuracy. The so-called dosage each area is to receive must in the present state of knowledge and with the existing methods used in estimating the same be left to the judgment of the operator. He will give to the patient that amount of X rays that he knows can be given with safety, gauged by the characteristics of the tube and the number of milliampères passing through it, the reading on the Bauer qualimeter and the length of the equivalent spark gap, controlled by one of the methods devised for estimating the dosage through the discoloration of pastilles or photographic paper after it has been developed. In other words, given certain working data the operator knows for what length of time he can submit his patient to irradiation without inflicting any damage; but to say he can administer such and such a dose of X rays to each ovary is not practicable. Much work has been done, and is being carried out at the present time, to devise some means of recording the accurate dose of X rays administered, but the difficulties of this problem are very great, and until we have some fairly accurate method of measuring the dose the patient receives it appears to us a wiser plan not to speak of some imaginary dose the patient is supposed to have received, but to express the dosage in terms of time exposure.

Effects of X Ray Treatment.

We now come to describe the effects of the treatment as we have seen them in our series of cases.

Mode of action.—It will be sufficient to remember that the outstanding effect of the rays is exerted upon the ovaries, leading to destruction of the follicular and interstitial elements, and eventually to complete fibrosis of the organ. At the same time a very marked and rapid shrinkage occurs, as a rule, in the fibroid tumour, up to complete disappearance in some instances. The tissue elements of the tumour are certainly absorbed, and we believe that this must be due to some process analogous to autolysis. It may be that under the influence of X ray irradiation ferments are produced locally which are active as against the elements of the tumour, but inert as against those of the normal tissues. Inasmuch as the operation of double oöphorectomy for fibroids as formerly practised seldom resulted in any marked degree of shrinkage of the tumour, it is reasonable to conclude that this reduction in size of the fibroid is largely due to the rays, not to the elimination of the internal ovarian secretion.

Effect on menstruation.—We have succeeded in all but five cases treated by X rays either in inducing complete amenorrhœa or in so reducing the frequency and the severity of the losses as to relieve symptoms completely. The dose required, as estimated by the time exposure, varied very much, the limits being 2 hours 27 minutes and 15 hours 35 minutes. The longest exposures (those over 10 hours) were all given in cases of fibroid tumours; on an average it may be said that cases of chronic metritis require a smaller dose to produce amenorrhœa than do fibroids. We cannot find in our cases that the age of the patient has any bearing upon the dose required, although we anticipated in starting our work that the younger ones would require the larger doses.

The initial effect upon menstruation is often to increase the amount of the flow. This often occurred after the first or second treatment. On the other hand, the first exposure is sometimes followed at once by marked diminution of bleeding, shown by absence of clots, or by a prolonged intermenstrual interval. The early increase in menstrual losses is probably brought about by a stimulation of the activity of the ovarian tissue representing the first effect of a small dose of the rays. As the effects of the rays are continued, stimulation of ovarian tissue is replaced by a reverse action which ends in complete destruction. In the case of fibroid tumours we have several times noted the occurrence of a slight, continuous, blood-stained discharge for some weeks after menstruation proper had ceased. This is probably associated with the changes in the tumour which result in shrinkage.

There were in all 10 cases in which we did not succeed in inducing complete amenorrhœa—5 fibroids and 5 chronic metritis. In 3 of the 10 cases the losses continued to be severe and the patients were eventually operated upon. The details (Nos. 8, 12, and 76) will be found in the account of selected cases at the end of this paper. Another patient (No. 41) refused to continue the treatment, which, if persisted in, would probably have been successful. In another case (No. 29) the treatment, although thoroughly tried, also failed to reduce the monthly losses except temporarily. This patient still refuses operation, and her case must also be classed as a failure. If No. 41 be eliminated there remain 4 cases out of 76—i.e., 5¼ per cent.—in which we failed to produce any lasting effect upon menstruation. All four were cases of fibroid tumour, and accordingly the percentage of failure in cases of fibroid tumour works out at 8·7 per cent., while in cases of chronic metritis there was no failure at all.

Cases in which menstruation was controlled but not suppressed.—In 5 cases a very interesting result was obtained, for, without suppressing menstruation altogether, the treatment so far controlled it that symptoms were entirely relieved without actually inducing the menopause. These cases are numbered 39, 49, 56, 65, and 70; the first a fibroid, the others chronic metritis. A typical example of this class is case No. 39, a patient, 45 years of age, with a fibroid tumour extending nearly to the umbilicus. After prolonged treatment she still has a moderate period about twice a year, there are no menopause symptoms, her general health is good, and the tumour is about two-thirds of its size before treatment. The most striking example of all is No. 70. This was a patient aged 40, classed as chronic metritis, with a history of menorrhagia for 2½ years before treatment. After five treatments she had four months amenorrhœa; then the periods returned, normal in amount and duration. She has continued to menstruate normally for four years and nine months—i.e., up to December, 1920—the date of the last report.

Such effects as these are probably to be explained by assuming that a varying resistance is offered to the rays by ovarian and uterine tissues. The active ovarian elements may perhaps be put out of action by the rays for a more or less prolonged period and then recover some of their functional potency, or the destruction of these elements by the rays may be incomplete, sufficient follicular tissue escaping to induce occasional menstrual periods. Or again, changes may be induced in the uterus which tend to control menstrual hæmorrhages.

Partial suppression of menstruation is not to be regarded as a failure. It would perhaps be right to regard the ideal dose of X rays as that which suffices to confine the monthly losses within normal limits, rather than that which suppresses them altogether. In the present state of uncertainty as to the estimation of dosage the attainment of such an ideal seems impracticable, but our experience leads us to believe that by careful graduation of time-exposures we may be able to reduce excessive monthly losses, or to induce partial amenorrhœa, with the same degree of certainty as we can now induce complete amenorrhœa.

General Effects of X Rays.

The immediate effects produced by the prolonged exposures we used were not constant. The majority of our patients suffered more or less from fatigue, which lasted for two days or more, and which led us to advise that after the X ray exposure the patient should go to bed for the remainder of the day. In one or two rather marked prostrations occurred. In a few instances, on the other hand, the rays appeared to produce a stimulating effect, the patient feeling all the better for it.

Local Effects.

Skin.—The areas exposed to the rays always show immediately afterwards a more or less marked flush, which is later replaced by brown discoloration or pigmentation. No soreness or irritation occurs in connexion with this change, and after treatment has ceased the pigmentation very gradually disappears. In three cases a mild dermatitis occurred during treatment, which was in consequence interrupted for a time. There was no loss of tissue and very little pain accompanying it; in the worst of the three treatment was suspended for six weeks and was then resumed without any further trouble. We have had no case in which skin trouble has developed subsequent to treatment.

The uterus in chronic metritis.—Our impression from bimanual examination made at varying intervals after suppression of menstruation is that a definite reduction in size occurs in the uterus coincident with the suppression of menstruation.

Fibroid tumours.—Definite shrinkage of the tumour followed the suppression of menstruation in all of our fibroids treated except four. The shrinkage is fairly rapid and can be followed during the treatment. In three instances we have noted the practically complete disappearance of a small fibroid tumour, the size of a three months gravid uterus, in less than a year. By "practically complete disappearance" it is meant that nothing remained except one or two small surface nodules suggestive of subperitoneal fibroids, the uterine body being otherwise of approximately normal size. The majority of the cases in which this marked shrinkage has occurred have been examples of small tumours not exceeding the size of a 3½ to 4 months gravid uterus. In three cases, however, we have seen a fibroid reaching as high as the umbilicus disappear entirely with the exception of one or two nodules (Cases 23, 31, and 38). The maximum shrinkage appears to take place in from 6–12 months in tumours not exceeding the size of a 3–4 months pregnancy, and in from 12–24 months in tumours larger than this.

Pelvic and abdominal viscera.—In addition to the effects described upon the uterus and the ovaries, we have been unable to detect any influence upon the other pelvic viscera except possibly in one case recorded fully below. (Case 59.) We have paid careful attention to the mobility of the pelvic organs before and after treatment, and except in this doubtful case we have never found after the X ray treatment that any tenderness or loss of mobility was manifested, in fact, nothing whatever to suggest that any local inflammatory changes were induced by the X rays. In a few cases nausea was complained of for one or two days after each treatment; in one case (Case 1) nausea was very severe and lasted for several days after each treatment, during which the patient could take no food. On one occasion the same patient suffered from severe diarrhœa after a treatment. For over two years since then she has been in good health and is habitually constipated. Whether these effects should be attributed to a direct action of the rays on small intestine or other viscera we are unable to say. In two or three of our cases a little looseness of the bowels was noticed for a few days after treatment.

Possible Risks of Injury by X Rays.

This leads us to the question, Is there any risk that injury may be done by X rays to the skin or to the pelvic and abdominal viscera? With regard to the skin, we have had two cases only of slight dermatitis, both of which cleared up without ulceration; there is no doubt that by efficient filtration and protection the skin can be adequately guarded. The question of the possibility of injury to such organs as the intestines cannot be so readily answered, as they are not under direct observation. Cases of X ray ulceration of the small intestine have been recorded in France and Germany, and in view of the frequency with which coils of jejunum are found lying in the pelvis they may, of course, be subject to irradiation along with the other pelvic contents. No such case has occurred in our series, but we have had one case which was operated on for pelvic inflammation eight months after the cessation of treatment, and terminated fatally. We believe the condition was in reality due to an acute ascending infection which arose after the X ray treatment was concluded. Definite proof is, however, wanting; we therefore lay the facts of this case before the Section, as this is the only one in our series in which any suspicion could arise that injury had been caused by the X ray treatment.

CASE 59.—Married, aged 43; children, 3. (1/4/14.) Symptoms: Menorrhagia of two years' duration. Local conditions: Chronic metritis, uterus enlarged; mobility of uterus impaired; no evidence of tubal inflammation.

Treatment: Total exposure 5 hours 20 minutes in five treatments. April to July, 1914.

Effects on menstruation: Complete amenorrhœa from June, 1914.

General effects: General health improved, but symptoms of intestinal irritation commenced with diarrhœa and some abdominal pain. (September, 1914.) These symptoms continued and the patient was admitted to Chelsea Hospital for Women in March, 1915, eight months after the last X ray treatment, not having been seen by me (F. L. P.) since the previous September. She was then found (per vaginam) to have a tender mass filling Douglas's pouch and extending into both sides of the pelvis, especially the left. The motions were fluid, containing small amounts of fæcal matter, but no mucus or blood, attacks of constipation and diarrhœa alternating.

March 23rd, 1915: Laparotomy performed. An inflammatory swelling was found filling up the pelvis, shut off from general abdominal cavity by adhesion of bowel and omentum, which were separated. Uterus adherent to rectum; both tubes inflamed, the left containing about a teaspoonful of pus. On separating uterus from rectum pus escaped which was loculated between the two organs. An opening was at this stage discovered in the rectal wall; whether it was caused by separating adhesions or whether it was an old opening communicating with an abscess cavity could not be decided. There was a great deal of perirectal inflammation. The left tube was removed. The hole in the bowel was closed with great difficulty and the uterus lightly sewn over it. A gauze drain was inserted and the abdomen closed. By an incision in the left inguinal region a portion of the descending colon was brought out of the abdominal cavity and a roll of gauze pushed through the mesentery to secure it in position, and a few stitches fixed the bowel to the inguinal incision. The colotomy was performed four days later. At this time a fæcal fistula had formed in the subumbilical incision. The patient was at first very ill; 48 hours after operation she was much improved, but her condition soon gave rise to considerable anxiety, chiefly because of the quantity of pus discharged from both wounds.

May 5th, 1915: Patient passed a large quantity of pus per rectum. From this date to 5/8/15 condition improved, though the state of the abdominal wounds was never satisfactory. At the latter date severe diarrhœa set in from which she recovered, and her general condition began to improve again, her temperature falling, and her general aspect was much brighter. On 13/8/15 patient was seized with sudden abdominal pain, a large quantity of pus exuded from the colotomy wound, and she died with all the signs of general peritonitis.

This case has been reported fully on account of its importance. The question arises, Was the pelvic condition due to X ray treatment? Unfortunately, no post-mortem examination was made and the presence of ulceration of the bowel cannot therefore be excluded. The first symptoms, sharp pain and flatulence after eating, which also caused the bowels to act slightly, commenced six weeks after the last treatment; the bowels were moved in these attacks some 10 to 12 times and the condition was always relieved by a small dose of castor-oil. This condition, gradually getting worse, continued till her admission to hospital, but the patient was not seen after January, 1915, till her admission in March, 1915.

The fact that both tubes were inflamed points to the possibility of a recently acquired ascending infection, or it may be that a pre-existing but undetected tubal inflammation was activated by the X ray treatment. The early symptoms, which commenced six weeks after the last X ray treatment, pointed, however, to intestinal irritation, and this is the only point in the case which cannot satisfactorily be explained.

The X Ray Menopause.

We have taken the symptom of "flushings" as the best available guide to the severity of the menopausal effects, and inquiry has been made upon this head in every case. The result is that in a little less than 50 per cent. of our cases "flushings" have been reported as "slight" or "absent," or the inquiry has not been answered; in one-eighth they were reported as moderate, and in three-eighths as "severe." In many of the latter class the flushings were frequent both day and night, and persisted in some for two years and upwards after the treatment had ceased. We formed the impression that in some of our cases, a small proportion of the whole, this symptom was more severe and prolonged than we have ever seen it in the natural climacteric.

In all other respects there is nothing that calls for comment in the menopause, except that nervous symptoms of a functional character appeared to be less frequent than under natural conditions. Many of our patients have inquired of us whether as a result of the treatment they would grow fat or lose their feminine qualities of body and mind. Special inquiry has been made of all our patients with regard to the former, with the result that though the majority have gained a

certain amount of weight there has been no tendency to corpulence of an unsightly character. With regard to the latter, we have made inquiry when opportunity offered and have not found a single instance in which signs of masculinity appeared or in which there was any loss of sexual feeling; in one case there was a distinct increase of sexual feeling during the treatment, in all others the inquiry was negative.

Relative Advantages of X Ray Treatment and Operation.

As X ray treatment is only suitable for carefully selected cases, we do not think that it will ever supplant hysterectomy as the chief method of dealing with cases of uncontrollable uterine hæmorrhage. Generally speaking, all cases of chronic metritis or fibroid tumours which are complicated by inflammatory disease of the adnexa, all cases of large or degenerating fibroid tumours, and all cases of fibroid polypus must be dealt with by operation. The same must be said of all cases in which malignant disease cannot be satisfactorily excluded. At present it must also be said that only women of 38 years and upwards are suitable for X ray treatment.

These contraindications being granted, there still remains a considerable number of cases of uncomplicated chronic metritis and of small fibroid tumours which can be satisfactorily dealt with by X rays. It is, in our opinion, probable that further experience of the treatment, and perhaps improved technique, will enlarge the scope of the method beyond the limits which we have defined for it. It follows that we have an alternative to hysterectomy in this group of cases, and it is as an alternative procedure only that we have come to regard it.

To many women an operation is an ordeal which is greatly dreaded, while others submit to it with very little reluctance. Most of the cases which we have treated have in fact been so treated on account of the great dread of an operation which these women have manifested. In certain others, special conditions which increase operative risks, such as Graves's disease or valvular disease of the heart, have been present. As a rule, in cases suitable for X ray treatment, we may allow the patient to decide whether she will be operated upon or whether she will be treated, unless some complication exists which will increase operative risks. Except when organic disease exists elsewhere which renders an operation more than ordinarily risky, if the patient prefers an operation she need not be dissuaded from submitting to it.

As compared with hysterectomy X ray treatment has the advantages that the ordinary life and work of the patient need not be interrupted for more than two days at a time, and that the prolonged partial invalidism, which often lasts for several months after an abdominal operation, is completely avoided. These are considerations to which we are bound to give weight, and which will in many cases influence the choice of method. The disadvantages of X ray treatment are the uncertainty as to the length of time required to produce the result aimed at, and the very slight risk there may be that the treatment will be unsuccessful, and that operation may eventually be required. The latter is a minimal risk, and will no doubt be eliminated entirely as experience grows.

Conclusions.

1. In our opinion X ray treatment should be regarded as the method of choice in women over 38 for all uncomplicated cases of severe hæmorrhage due to chronic metritis, or other conditions in which no neoplasm is present. In our experience these cases yield more readily to the treatment than do fibroid tumours. The presence of inflammatory disease of the tubes and ovaries is a contra-indication.

2. Fibroids of the size not exceeding the height of the umbilicus may be treated with X rays if the patient is over 38 years old, if the hæmorrhage is of the regular monthly type, and if there is no evidence of inflammatory disease of the tubes and ovaries, or of advanced degenerative changes in the tumour. If intercurrent conditions which tend to increase operative risks are present X ray treatment should be regarded as the method of choice, in other cases the choice may usually be left to the patient.

3. No case should be submitted to X ray treatment without a careful gynæcological examination being previously made, to exclude malignant disease, inflammatory complications, and degenerative changes in fibroids.

4. The risks of failure with X ray treatment in suitably selected cases are so small as to be negligible; the X ray menopause may be attended by more severe flushings than in the normal menopause, but in other respects there is no difference between them; there is no tendency to corpulency or to psychological changes.

SELECTION FROM EPITOME OF CASES.

The following cases, to which reference was made in the foregoing text, have been selected from an epitomised account of 76 cases:—

CASE 1.—Married, aged 48; children, 0; miscarriage, 0; March, 1918. Symptoms: Severe menorrhagia and dysmenorrhœa. Bad general health; frequent attacks of faintness; these were attributed by Sir James Mackenzie to anæmia resulting from excessive menstrual losses. Local condition: Uterine fibroid size of 2½ months pregnancy.

Treatment: Total exposure, 7 hr. 12 min. in four treatments, from March to June, 1918.

General effects: Patient suffered severely from nausea for several days after each treatment, and on one occasion there was severe diarrhœa. Period April 14th to 25th, much less in amount and less painful. Flushings began in May.

Last report, November, 1920: Complete amenorrhœa since April, 1918. Occasional slight brownish discharge for a day or two. Flushings were severe and still continue. Writes that she is "a new woman since the treatment."

CASE 8.—Married; aged 52; children, 1; miscarriage, 1; July 9th, 1916. Symptoms: Menorrhagia; very severe floodings following first confinement 28 years ago; severe dysmenorrhœa. Diagnosis: Chronic metritis. Uterus nearly twice its normal size.

Treatment: Total exposure, 3 hr. 15 min. in four treatments. July to October, 1918.

Effect on menstruation: Amenorrhœa for 6 weeks after first treatment. After this menses every 2 to 3 weeks, with very severe floodings, for which patient had to be plugged.

Hysterectomy was advised and performed Nov. 6th, 1918. At the operation no adhesions were found; uterus was twice its normal size, the condition present being one of chronic metritis with great thickening of the endometrium. Patient has continued well to the present date—January, 1921.

CASE 12.—Married; aged 37; children, 1; August 21st, 1916. Symptoms: Menorrhagia; very severe backache. Patient suffers from gastric ulcer. Diagnosis: Fibromyoma, extending up to 2 inches below the umbilicus.

Treatment: Total exposures, 3 hr. 29 min. Last treatment, Dec. 2nd, 1915. The treatment carried out by irradiating 3 to 4 areas every three weeks instead of 10 to 12 as was usually done, which probably explains the failure to produce permanent amenorrhœa. The patient refused to have further X ray treatment and requested that the uterus should be removed.

Effect on menstruation: Amenorrhœa, December, 1915, to June 24th, 1916, when a normal period occurred. Then missed for three months, when period came on and recurred every 14 or 21 days, with occasional floodings, to time of operation—March, 1917. Severe backache unrelieved by the treatment. Local effects: Tumour gradually diminished in size till August 3rd, 1916, when a subperitoneal fibroid the size of a hen's egg extending out from the right side of the uterus was all that could be found. General effects: General health improved. Flushings fairly severe still—Jan. 8th, 1921.

Operation (April, 1917): Supravaginal hysterectomy was performed; the uterus contained a fibroid, the size of which is not mentioned in the notes. There were dense adhesions between the uterus and the rectum, and some adhesions of small bowel to the uterus also. The left ovary was cystic. The right small and fibrotic. The left tube and ovary were removed with the uterus. Patient reports herself very well at the present time (January, 1921). No intestinal symptoms reported either before or since operation. The backache, however, remains severe. We consider that failure in this case was due to insufficient treatment.

CASE 23.—Married; aged 50; children, 4; miscarriage, 1; June, 1914. Symptoms: Severe menorrhagia for five years, 10/25. Suffered much from "heart trouble," and this was attributed by Sir James Mackenzie to the profuse monthly losses. Local conditions: Irregular fibroid tumour size of about four months gravid uterus.

Treatment: Total exposure 6 hr. 54 min. in four treatments.

General effects: Complete amenorrhœa after third treatment; first two treatments produced no diminution of bleeding. Severe flushings which lasted for about two years. Local effects: Complete disappearance of the fibroid was noted on March 17th, 1915, the uterus being approximately normal in size and outline.

Last report, January, 1921: No return of periods. General health excellent, and she leads a very active life. The uterus is now about the size of the normal nulliparous organ, and no trace of fibroid tumour can be found.

CASE 29.—Married; aged 42; children, 5; Jan. 8th, 1917. Symptoms: Severe menorrhagia, 10/24, bleeding being at times alarming in severity. Local conditions: Large nodular multiple fibroid tumour extending nearly to umbilicus in mid-line. Patient corpulent.

Treatment: Total exposure, 21 hr. 30 min. in 11 treatments over a period of 14 months.

General effects: The treatment completely failed to arrest bleeding; an interval of 5 months occurred at one time during treatment, but this was succeeded by irregular hæmorrhage which was still continuing, though in less quantity, in December, 1920. The patient persistently refused operation.

CASE 31.—Married; aged 46; children, 2; Oct. 2nd, 1917. Symptoms: Severe menorrhagia, 7-10/21. Local conditions: Smooth hard fibroid extending to lower border of umbilicus and with little mobility.

Treatment: Total exposure, 8 hr. 7 min. in six treatments, October 1917, to April, 1918.

General effects: No serious loss after second treatment; nearly constant slight show of blood from March to June, 1918; no loss at all after then; flushings moderate. Local effects (June 12th, 1918): No tumour palpable on abdominal examination. On vaginal examination uterus found anteverted, bulky, freely mobile, with an ill-defined small outgrowth on left. Slight X ray dermatitis.

Last report (November, 1920): No return of periods since June, 1918. Slight flushings still occur occasionally. General health better than for years and very active.

CASE 38.—Married; aged 45; children, 1; Oct. 17th, 1914. Symptoms: Moderate and irregular menorrhagia. Local conditions: Hard nodular fibroid tumour extending to level of upper border of umbilicus. She had refused to undergo hysterectomy before consulting us.

Treatment: Total exposure 12 hr. 36 min. in eight treatments from October, 1914, to June, 1915.

General effects: Very little until after fourth treatment, then three months amenorrhœa followed by a severe period in April, 1915. Another period in May, then complete amenorrhœa. No flushings during treatments. Local effects Jan. 17th, 1916: Upper border of tumour is felt at level of pubes; on bimanual tumour reduced to less than half its size when first seen. May 19th, 1919, uterus found retroverted; approximately normal size, with several small subperitoneal nodules on surface.

Last report, November, 1920: Flushings have occurred slightly during last six months (age 51). General health very good. Leads an active life. Has lost a little weight.

CASE 39.—Married; aged 45; children, 0; miscarriage, 0; May, 1916. Symptoms: Fairly severe menorrhagia. Local conditions: Hard nodular fibroid tumour extending nearly to umbilicus.

Treatment: Total exposure, 15 hr. 50 min. in eight treatments over two years. June, 1916, to May, 1918.

General effects: After three treatments a two months' interval occurred, followed by a show for 2 to 3 days, and then complete amenorrhœa for six months. Since September, 1917, one or two moderate periods each year. Flushings slight. Local effects: In April, 1918, the fibroid had diminished to two-thirds of its original size; no further shrinkage occurred.

Last report, November, 1920: Good general health and leads an active life. One or two moderate "periods" still occur every year.

CASE 41.—Single; aged 38; July 25th, 1914. Symptoms: Menorrhagia. Diagnosis: Fibroid size of two months gravid uterus.

Treatment: Total exposure, 1 hr. 57 min. in two treatments. Last treatment Sept. 19th, 1914.

Effect on menstruation: Menorrhagia continues and there is also slight daily loss, Sept. 19th, 1914. Ceased to attend: Treatment incomplete.

Report, 1920: No reply.

CASE 49.—Married; aged 38; children, 1. Symptoms: Menorrhagia, headaches, debility. Diagnosis: Chronic metritis.

Treatment: Total exposure, 2 hr. 10 min. in two treatments. Last treatment, June 24th, 1918.

Effect: After two treatments period diminished to normal. General health improved. Decided to give no more treatment.

Note taken April 1st, 1920: Amenorrhœa, July, 1918, to January, 1919. January, 1919, to July, 1919, periods every 14 to 21 days, duration 10 days. Amenorrhœa July, 1919, to January, 1920. January, 1920, period lasting 14 days. Amenorrhœa since to April 1st, 1920. Patient refused further treatment.

CASE 56.—Married; aged 47; children, 0; May 4th, 1917. Symptoms: Menorrhagia; very marked neurasthenic symptoms. Diagnosis: Chronic metritis.

Treatment: Total exposures 3 hr. 40 min. in three treatments from May to August, 1917.

Effect on menstruation: Amenorrhœa from September, 1917, to September, 1919, when she had hæmorrhage for 2–3 weeks. Advised further treatment, but this was refused. Amenorrhœa from September, 1919, to June, 1920, when severe hæmorrhage occurred, lasting two days. Again severe hæmorrhage September, 1920. Patient has been taking thyroid extract. Advised further treatment or curettage, but this was refused. General effects: Flushings moderately severe.

Last report: Sept. 25th, 1920.

CASE 65.—Married; aged 43; children, 2; Oct. 16th, 1918. Symptoms: Very severe menorrhagia necessitating 3 to 4 days in bed. Local conditions: Bulky uterus but no fibroids, probably chronic metritis.

Treatment: Total exposure 8 hr. 40 min. in five treatments from October, 1918, to February, 1919.

General effects: After the first and second treatments considerable improvement, an interval of seven weeks having occurred. After third treatment a very bad hæmorrhage occurred which lasted altogether for a month. Slight flushings.

Last report, January, 1921: Menstruation still occurs at irregular intervals, but loss is moderate since treatment. Flushings only slight.

CASE 70.—Married; aged 40; children, 2; miscarriage, 0; August 6th, 1915. Symptoms: Menorrhagia 2½ years. Severe leucorrhœa. Diagnosis: Retroversion of uterus. Chronic metritis.

Treatment: Total exposuret 4 hr. 40 min. in five treatments. August to December, 1915.

Effects on menstruation: Amenorrhœa from November, 1915, to March, 1916. Regular normal menstruation ever since.

Report, 1920: Periods have been regular, 4 to 5 days, loss slight since March, 1916. General health much improved. Gained weight.

CASE 75.—Married; aged 43; children, 3; August, 1919. Symptoms: Prolonged and very severe hæmorrhages lasting from 2 to 4 weeks, with irregular intervals. Profound anæmia and debility. Local conditions: Bulky uterus, no fibroid. Chronic metritis. Patient was advised to undergo hysterectomy, but she and her husband (a doctor) both declined.

Treatment: One treatment lasting 1 hr. 50 min. was given, and this was followed by a flooding so severe that consent was given to operation. The uterus was successfully removed, and the diagnosis of chronic metritis confirmed.

January, 1921, the patient is now in very good health.

CASE 76.—Single; aged 46; Feb. 14th, 1914. Symptoms: Menorrhagia for 3 years, pain for a week before periods. Local conditions: Hard fibroid extending to upper border of umbilicus.

Treatment: Total exposure, 9 hr. 56 min. in six treatments.

Effects: Relief of pain. Amenorrhœa from May to November, 1914. Severe flushings. Severe losses in February, March, and April, 1915. Local effects: No change in fibroid. Hysterectomy, April 30th, 1915. No adhesions.

OPERATION FOR
REMOVAL OF THE APPENDIX IN THE QUIET PERIOD.

BY W. H. BATTLE, F.R.C.S. ENG.,
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EVEN at the present day differing opinions are given in books on operative surgery regarding the merits or demerits of the various operations for removal of the appendix in the quiet period. Some of them appear to be written with an imperfect knowledge of what practical work may be required in the operation selected. An analysis of the conditions found in the abdomen after one or more attacks of appendicitis in a consecutive series of cases under the care of one surgeon may assist those who have not had large experience of the problem. The series brought forward are the first 1000 which came under the writer's care and were operated on by him or by a house surgeon under his supervision; the series was completed some years ago, and it is therefore possible to give some of the results at a sufficiently remote period. In THE LANCET,[1] 1910, a synopsis of 400 cases was given, and to these another 600 are now added, the two series being placed together for the purpose of this paper; in neither group is operation during an acute attack included.

At each operation the parts around were also examined, adhesions estimated and treated, and the pelvic organs examined for abnormality, displacement, or disease. In a few the kidneys, ureter, the gall-bladder, and pylorus were palpated, but the operation was done because the symptoms of which the patient complained were considered to be due to a diseased appendix.

Conditions Necessary for Operation.

Any operation performed for removal of the appendix "à froid" must be without risk, should give adequate access to the part where the diseased structure is lying, permit of the manipulation required in every case, and the treatment of local complications due to inflammation, or to some separate disease. It must be possible to close the wound without any local weakness, for the patient must not be handicapped by the necessity of wearing an apparatus to reinforce a weak abdominal wall.

Causation of Fatal Results.

Under modern conditions of wound treatment any incision which opens the peritoneum is safely made, but there must be no question of even 2 per cent. of fatality. The fatal results which ensue after removal of the appendix in the quiet period may arise from the following causes:—

(*a*) *Peritonitis.*—(1) The result of accidental infection during the operation. (2) Contamination during the severance of the appendix. (3) The opening of some concealed abscess, probably of recent formation. (4) Separation of some firm adhesion giving rise to a tear in the wall of the gut, which passes unobserved. In two of the cases there was a second communication between appendix and cæcum. (5) The yielding of sutures placed in the wall of the gut or at the point of section from the cæcum, as a consequence of violent vomiting, sneezing, or coughing.

(*b*) *Hæmorrhage.*—Hæmorrhage into the peritoneal cavity arising from the slipping of a ligature placed on the vessels of the meso-appendix.

(*c*) *Other risks.*—Other risks in common with all operations, from the action of the anæsthetic either at the time or during after-treatment, and the progress of some coexisting disease, such as tubercle.

[1] THE LANCET, 1910, ii., 368.

The attempt to remove the appendix through a keyhole incision is not to be recommended. Anyone making this attempt is probably of the opinion quite unjustified that all cases are easy and without complications. He is not acquainted with the fact that adhesions are common and often dense, that the appendix may be attached to neighbouring organs, and is not infrequently hidden and misplaced.

State of the Appendix in 1000 Cases of Removal in the Quiet Period.

—	Male.	Female.	Ages.							Total
			10	20	30	40	50	60	Over 60	
Apparently normal	4	3	—	4	2	1	—	—	—	7
Hypertrophy	1	—	—	—	1	—	—	—	—	1
Obliterative inflammation	6	10	1	1	2	3	7	2	—	16
Catarrhal	242	269	25	153	201	72	43	16	1	511
Stricture	183	134	21	59	128	65	35	9	—	317
After abscess	71	74	14	41	45	32	8	2	3	145
Tubercle	—	2	—	1	1	—	—	—	—	2
Carcinoma	—	1	—	1	—	—	—	—	—	1
—	507	493	61	260	380	173	93	29	4	1000

This table shows the relative proportion of the various primary conditions of the appendix. The frequency of secondary complications and their importance must be considered in more detail.

The operation in a very stout patient may involve incision through some four inches of subcutaneous tissue and fat before the muscular wall of the abdomen is reached. The opening must be adequate and capable of rapid enlargement if the condition found demands more space for manipulation. Such enlargement must not add to the risk of subsequent hernia. There is another reason for securing plenty of space in the fat subject, and that is the necessity of closing the deep wound without catching any omentum, either with the edges of the peritoneum as they come together or by the needle as it is passed across.

It is much easier to remove an acutely inflamed appendix during a first attack than one which has been left to become fixed to parts around by adhesions, which are often dense and extensive. They often appear out of proportion to the severity of the attack as described by the patient. In six instances the appendix was apparently normal when removed after more than one definite attack of appendicitis. In one it was removed as a precautionary measure for a nurse who had been in charge of a fatal case of first attack.

A general hypertrophy of the appendix without any evidence of inflammatory changes is not often met with. In the solitary patient of this series, a boy, aged 16, there had been frequent attacks of abdominal pain without any rise of temperature. The attacks were not sufficient to make him stay in bed, but interfered very much with his desire to lead an active life. The appendix was 8 in. in length and very movable.

Results of Chronic Inflammation.

The results of chronic inflammation come under the main headings of Catarrhal 511, Stricture 317, and "After abscess" 145, which "pathologically" come under these two headings. We must consider these groups more closely, as together they constitute a total of 973 out of the 1000, and are therefore the most important.

1. Catarrhal, those in which one or more attacks had resulted in the formation of a fibroid deposit in the wall of the appendix, which had not produced an intrinsic stricturing of the lumen of the tube. There may be no history of an acute attack. The fibrous changes are most frequently met with as a deposit in the submucous tissue at or towards the distal end, and repeated attacks may cure by an obliteration from below upwards. Unfortunately in a large number one attack is sufficient to cause crippling of the muscular wall of the appendix, and it becomes a stiffened tube, incapable of expelling its contents. A sac for the trapping of fæcal matter is formed from which much trouble may arise from painful attacks, with or without signs of inflammation; from toxic absorption, the formation of concretions or coproliths, or from reflex action on other parts.

2. The cicatricial change may be localised (as definite and limited as that of the urethra), a stricture of the tube being formed, the results of which are ultimately dangerous. The lumen becomes obstructed; in some this leads to an acute over-distension of the parts beyond and rupture into the peritoneum. If closure is more gradual dilatation of the appendix beyond may cause a mucocele, the size of which is sometimes great. When an inflammatory attack complicates stricture it may give rise to a retention of pus and fæcal matter which escapes, although with difficulty, and produces but few local signs. If a fæcal concretion is trapped beyond the constricted part it may act like a ball valve, producing an acute distension and rupture, or produce ulceration by pressure on the mucous membrane and structures over it, which perforates into the peritoneum. The immediate danger in cases of rupture varies much according to the situation of the stricture and the amount of septic contents beyond at the time the wall gives way. Sometimes a superficial ulceration of the mucous membrane is disclosed only by microscopical examination. It is a common experience to find a stricture which has obliterated the lumen and given rise to an acute obstructive attack when no history of previous illness can be elicited. This statement applies both to adults and children. Probably some foreign body had caused a breach of the epithelial lining, and been expelled by a reflex contraction of the appendix, but the ulceration continued as a slow process, without producing any symptoms to draw attention to it until contraction had progressed to a definite obstruction.

3. Other changes of a secondary character are found in an appendix after inflammation in addition to its loss of muscular power. It may become knotted or twisted in various ways, this position being rendered permanent by adhesions.

4. The meso-appendix varies in the amount of its involvement during an attack. Its function as the conveyer of blood and lymphatic vessels renders its involvement during appendix inflammations of great moment. Thrombosis is common. Even when the appendix is apparently free from traces of past storms, the meso-appendix may be shortened in one segment, possibly causing a kink, or a more general shortening in a mesentery of a different shape may cause a corkscrew twist. It was often described as shortened, thickened, and indurated.

5. The adhesions which may form from organisation of the lymph effused during the process of limitation of an inflammatory exudation or septic invasion, vary considerably in number and extent. It is not possible to say with much certainty if an attack will be followed by adhesions which may require incision with knife or scissors, or whether the appendix will be free and of apparently normal appearance and attachments.

In 4 cases of the first series of 400 the adhesion of coil to coil during recovery from an abscess caused obstruction which required operation. In another (second series) obstruction followed severe intraperitoneal hæmorrhage. Not infrequently it is the strong bands fixed to surrounding parts which prove most dangerous; the wider and more dense which bind down the appendix itself, sometimes completely concealing it, tend to limit later attacks. The danger of obstruction of the bowels by bands which ensue after attacks of inflammation in the abdomen, mostly of appendical origin, must not be forgotten, nor the fact that the appendix itself may become fixed to some structure in the iliac fossa or the pelvis, to the intestine, or to the abdominal wall, and so make a snare for the small gut.

Adhesions.

The question always arises before operation, Are there any adhesions and, if so, are they likely to be numerous or dense? When the patient has a clear history of appendix abscess it is probable that there

will be adhesions, and they are likely to be firm, if it is long since the attack.

In examining the cases of appendicitis comprised in this series we find that 223 out of 511 presented adhesions, which may be classified as slight (47) those which could be easily separated with the finger; moderate (75), which required some force to separate them; severe (110), which required to be divided with the knife or scissors.

The importance of previous attacks was investigated, a history of many attacks (more than four) apparently indicated that the appendix was not so likely to be very fixed.

—	Cases.	Slight.	Moderate.	Severe.	Free.
After the 1st attack	96	14	19	38	25
,, ,, 2nd ,,	93	10	17	11	55
,, ,, 3rd ,,	51	8	10	17	16
,, ,, 4th ,,	271	15	29	44	183

This should be compared with the cases in which intrinsic stricture of inflammatory origin was found at operation.

—	Cases.	Slight.	Moderate.	Severe.	Free.
After the 1st attack	69	3	23	25	18
,, ,, 2nd ,,	80	3	19	26	32
,, ,, 3rd ,,	56	3	8	13	32
,, ,, 4th ,,	112	3	14	18	77
	317	12	64	82	159

When dealing with a concealed appendix or with a case in which there are many adhesions, isolate the area involved with gauze wrung out in warm saline. Define the position of the intestinal tract in the adhesions, follow down the anterior band of the cæcum to the root of the appendix. Avoid force in separating any involved coil of bowel, and be careful in dividing strong adhesions. Repair lesions of the intestine, whether they are partial or complete.

Amongst the 145 cases of removal after abscess there were 87 in which the adhesions were extensive, yet at the time of removal of the appendix (usually a few days after closure of the abscess) many yielded to the pressure of the finger. It was possible by this early operation to arrange parts in their normal positions, or put them where contraction would do least harm, should the adhesions re-form. The abscess mostly occurred during the first attack.

It is quite understood that the adhesions formed as a result of the organisation of lymph effused is nature's effort to localise an inflammatory invasion; they were therefore useful to the individual so long as the attempt at invasion was continued. But as organised bands, layers, and attachments of fibrous tissue they are dangerous, interfering with normal movements of the parts, compressing and possibly snaring or obstructing the bowel. In later life these adhesions are amongst the most numerous of the causes of obstruction of an acute character. Deal therefore with these adhesions, and examine the pelvis for isolated bands; you may do much good by placing things in a normal state as far as possible.

To prevent adhesions forming as a result of operation precautions should be taken (1) to handle structures exposed in the abdominal cavity with gentleness; (2) to avoid the use of strong antiseptics, either as solutions during the operation or as applications to the skin. It is not always possible to prevent the omentum or bowel from coming into contact with the skin, and both react very readily to chemical irritants. (The use of picric acid and iodine was given up in consequence of an increase in the complaint of pain afterwards, possibly due to slight adhesions.) (3) Remember the danger of trapping omentum between the edges of the wound, or of possibly snaring it or the intestine with a deep stitch. If the wound is deep and funnel-shaped this is a real danger, especially if respiration is hurried and deep, or vomiting comes on before closure of the wound is effected. Adhesions may be very troublesome, and the patient who submits to early operation during an acute attack may avoid some years of misery.

The aseptic method is much the best in all abdominal cases. The concealed appendix may be found pointing in any direction, and even when it has been found, it may not be possible to extricate it whole from the firm bed in which it is lying. It is not infrequently the wisest plan to shell it out, leaving its adherent peritoneal sheath in the adhesions. The mucous lining is what we wish to obliterate. This method is accompanied by little bleeding. Solitary adhesions must be examined when divided to see that there is no central canal; an adherent appendix or stretched diverticulum may be divided without recognition, the result being disastrous, bowel contents escaping through the opening into the peritoneum after the wound is closed.

In the absence of adhesions the operation does not take much time, but hurried operation is never safe. An attempt to pull an adherent appendix through a keyhole opening is bad surgery. The opening must be adequate, and this can only be decided after examination. By the method employed[2] in the majority of the series given in this paper there need be no hesitation in extending the wound as far as the surgeon wishes. When the appendix is free, and the ovaries and tubes are normal, it will not be necessary to divide any nerve entering the rectus muscle. A long incision may necessitate division of nerves, but the nerve-supply above and below is adequate and no permanent weakness of the muscle ensues. It is an advantage to place the centre of the incision lower in the female than in the male; this gives better access to the pelvic organs.

If there are the remains of an old abscess or a granulation-lined cavity, possibly containing an escaped concretion, it may be cleaned with gauze and then washed out with peroxide of hydrogen. The cases in which drainage may be required are those in which an abscess of recent origin is found. It does not make any difference as regards the future strength of the abdominal wall whether the rectus sheath is incised over the middle of the muscle or more to the outer side. The principle to be remembered is the interposition of part of the uninjured muscle between the two lines of incision in the sheath.

The outer edge of the rectus is at a point three-fifths of the distance from the umbilicus to the ant. sup. spine of the ilium; therefore, if an incision is made over the mid-point between these landmarks it lies over the outer part of the rectus. If you place the cut over the middle of the rectus it is necessary to make a larger incision in the sheath to obtain room for deeper manipulations, because the outer lip of the incision is retracted with more difficulty.

Experience has shown that the appendix must be cut off level with the cæcum. No stump must be left, and the surgeon should ligature the vessels of the meso-appendix himself. There are advantages in using silk for this purpose. A satisfactory plan is the application of a clamp, which leaves a thinned peritoneal area, round which a ligature is placed. The appendix beyond is then removed between this and the forefinger and thumb, which prevent possible escape of contents. The small amount of tissue remaining is sunk in a groove, which is sutured edge to edge with No. 1 silk. The ends of this suture are tied together and the remains of the appendix firmly embedded.

In no instance was the appendix completely destroyed by disease, but in 15 there had been partial destruction. Sometimes the gap was closed by adhesions of the omentum, in others there were separated portions lying more or less in the line of the main body. Some were hard fibrous nodules throughout, others were lined by mucous membrane. Two women were admitted for symptoms similar to those which had induced them to undergo a previous operation for removal of the appendix; in both it was found that removal had been incomplete. One patient had slight evidence of fibrous changes in the thinned wall of an

[2] See THE LANCET, 1910, ii., 369.

appendix which was distended and filled with gas, resembling a finger-stall. No cause for this unusual condition could be found. In some chronic obstructive conditions of the large gut the appendix occasionally becomes extremely dilated and as large as the big toe of an adult.

Of the cases of inflammation which were not accompanied by local stricture of the intrinsic kind, 28 showed evidence of perforation during some previous attack. In some a concretion was found outside, but there was no trace of the perforation to be seen in the wall. In 96 the appendix was kinked or fixed in a twisted position; in several this must have produced an obstruction, the presence of which added to the patient's danger, and sometimes there was a concretion trapped beyond the narrowed part. In six it was thickened and twisted like a corkscrew. In six female patients, living in different parts of the country,[3] the mucous membrane presented a curious brownish-black pigmentation in addition to other changes. The fact that the pigmentation was continued evenly to the line of separation showed that it extended into the cæcum, but there was nothing to show how far beyond this it spread. It is difficult to account for this pigmentation in the absence of any history of the administration of iron, bismuth, or mercury in the form of medicine.[4] In 97 it was much thickened, once it was the size of an adult forefinger. It is not exactly stated in how many the meso-appendix was distorted as a result of inflammation. In a few there was no naked-eye change; in the majority when the appendix showed damage the meso-appendix corresponded.

Amongst those in which definite stricture of the lumen was the outstanding change this was strictly limited to one part in the majority. Its position varied as, indeed, did its length and degree of closure. The position was recorded in most of the 317 cases. It was proximal in 99, mesial in 73, distal in 85. When there were two strictures they were disposed as proximal and mesial, 2; proximal and distal, 12; mesial and distal, 1. Multiple, the strictures being disposed irregularly, 5. There was evidence of old perforation beyond the stricture in 52, and in some, where there had been two strictures, a depressed scar was found distal to each of them. It is interesting to note that these perforations were in the line of attachment of the meso-appendix and not far from the stricture. The evidence of perforation was mostly found in those who admitted only one or two attacks. There was dilatation beyond in several, a sac having been formed of varying size, in 32 mucus was found in this dilated part, and in 28 muco-pus. In 75 the appendix was much thickened and hard, the tip being very commonly bulbous. The presence of a small amount of pus found at operation, caseation or a granulation area near, showed the severity of a previous attack. These areas were sometimes walled in and concealed by adhesions, often of extreme density.

Operation after Abscess.

Under the separate heading of "Operation after abscess," it is not proposed to say much. It is interesting to note, however, that it contains fewer cases in proportion amongst the 600 owing to the great importance attached during recent years to early operation in acute appendicitis. In the former series of 400 there were 79 operations after definite abscess, in the 600 now added there were only 66. Operation was performed in 92 instances after the first attack. The rule has been to advise operation within a short time after closure of the wounds in all cases where the appendix was not removed at the opening of the abscess. The presence of a concretion in the pus did not prevent adherence to this rule. Sixteen suffered from three or more attacks before operation was permitted. In 79 there was a stricture of the appendix, 66 showed changes secondary to a catarrhal inflammation. Of the strictures (mostly single), 29 were proximal, 30 situated in the middle third, and 18 were distal. In 57 there had been perforation; in 9 there was still a small collection of pus, probably residual, which gave no signs of its presence; in 22 there was inspissated pus; and in 2 empyema of the appendix. Where there was a weakness of the ventral scar the layers of the abdominal wall were defined and sutured during the closing of the incision, which followed the line of the old wound. Otherwise all operations were carried out through the incised rectus sheath, with displacement of the rectus inwards. In three cases the appendix was removed at a second operation because the shock which resulted from intraperitoneal rupture of an abscess was so profound when they were admitted.

Pelvic Complications.

Pelvic complications were found at operation in several females. In 25 the ovary was excised for cystic disease (3 suppurating). In one a dermoid cyst was taken away, and in another a cyst of the broad ligament. In two instances where the cystic disease affected both ovaries a paramesial incision was also made. Chronic salpingitis required removal of the tubes in two instances. Small uterine fibroids were not infrequent. Retroflexion was a fairly common complication. In two instances Meckel's diverticulum, showing evidence of previous inflammatory attacks, by adhesion to surrounding parts, &c., was removed, and the opening into ileum sutured. In the first 400 there were 5 cases of superficial thrombosis, but only 2 in the series of 600 now added. The onset of this complication during the after-treatment was usually ill-marked, and in patients who appeared to be progressing normally. In one there was thrombosis during the attack of appendicitis which preceded the operation. Gas followed by ether was the usual routine of anæsthesia in the vast majority of instances given by Dr. Z. Mennell, to whom it is owing that chest complications were few and fatalities nil.

Mortality.

In the first 400 there was one death caused by accidental infection of the peritoneum by the *Bacillus pyogenes aureus*. In the additional 600 now given there was also one death, the result of vomiting and giving way of sutures in a stout flabby woman of 56. In this case there was a partial excision of the cæcum.

Strength of abdominal wall.—In only one of the series did a complete hernia develop; this occurred in a fat agricultural labourer who had much vomiting after operation. In his case the abdominal wall was successfully repaired. In two others there was a weakness of the scar, probably due to the yielding of sutures in the posterior sheath as a result of vomiting, but no bandage (or truss) is required. If the appendix has been cleanly removed at its junction with the cæcum, and there is no other abnormal state of the abdominal organs which has been overlooked, the prognosis as to complete recovery is very good. The attacks of pain will cease and he may expect to resume work under a month. Where the precautions advised at the operation are recommended there will be no likelihood of adhesions forming later, but the prognosis in those cases where adhesions had already formed as a result of previous attacks is less certain, but often these do not produce symptoms. The cases here tabulated give some idea of the amount of illness, pain, and distress which can by saved by operation in the early hours of the first attack of appendicitis. The time lost from the working years of the individual sufferer is not easily calculated; several had become chronic invalids. The patient who has had an undoubted attack of appendicitis is acting wisely to get rid of the probable source of future trouble.

[3] See THE LANCET, 1913, ii., 135; 1915, i., 173.
[4] Trans. Roy. Soc. Med., January, 1915.

THE Galton dinner will take place on Feb. 16th at the Connaught Rooms, Great Queen-street, Kingsway, London, W.C., at 7.30 P.M. As already announced, the annual Galton address will be delivered by Mr. W. Bateson, F.R.S., at 8.45 P.M., on Common Sense in Racial Problems. The chair at the dinner will be taken by the President of the Eugenics Education Society, Major Leonard Darwin, Sc.D.

QUININE TREATMENT OF MALARIA.

BY SIR PATRICK HEHIR, K.C.I.E., C.B., C.M.G., M.D.
MAJOR-GENERAL, I.M.S. (RETIRED).

READERS of THE LANCET interested in the quinine treatment of malaria will, like myself, feel greatly indebted to Majors J. Pratt Johnson and Kenneth Gilchrist for the record [1] of their experience during the German East African campaign contained in a recent issue; the editorial note on their paper in the same issue will be welcomed as emphasising the carefully prepared, accurate and important observations of these two officers. In India we received a large number of cases of malarial infection from German East Africa, many of them both severe and heavy; in the Northern Command we found it necessary to isolate several battalions returning from German East Africa at non-malarial hill stations until their infectivity (in the presence of malaria-carrying anophelines) had undergone considerable reduction. I would ask permission to make a few remarks on their paper, and to attempt to indicate how closely their observations correspond with those of one's own experience in India before and during the war, at the same time endeavouring to lay stress upon some of the more important practical points brought out by these writers.

Large-dose Treatment.

The large-dose treatment by quinine of malarial paroxysms, both in initial attacks and in relapses and reinfections, is probably the greatest improvement of malarial therapeusis in recent times. The records of the military hospitals of the Northern Command in India show that in those malarious stations where curative quinine treatment is most persistently and intensively carried out relapses are decidedly fewer than in those where its adoption has been half-hearted. This form of treatment is partly based on the assumption that the perpetuation of the asexual cycle of malaria parasites in the blood, spleen, and bone marrow is the responsible cause of relapses. It is possible that under certain conditions the asexual forms take on a relative immunity to the toxic action of quinine, although I do not think that we have as yet sufficient evidence to justify our dogmatising on this point. So far as observations go in India we have no definite proof that relapses are caused in any other way than by latent asexual forms of malaria parasites resuming activity and multiplying in the same manner as during the initial infection. Whether under certain conditions the spores of malaria parasites become immune or partially immune to the action of quinine remains to be proved, but the assumption that they do so gives us a definite and practical line of treatment of the initial paroxysms and those of relapses. The special significance of this hypothesis rests on its application to the treatment of malaria. Small doses of quinine, even in the slighter infections, may simply render the asexual cycle relatively immune, so that larger doses, which would probably have eradicated parasites in the early stages, are later ineffectual. It seems probable that were doses larger than those usually administered during the initial infection given for the first three weeks, and smaller doses continued subsequently, there would be considerably fewer relapses. Acceptance of this view implies the necessity of getting all cases of malarial fever under quinine treatment as soon as possible.

Malarial Parthenogenesis in Man.

Ever since 1904 various authors of books on malaria have described the process of parthenogenesis of malaria parasites as occurring in man, and have depicted the stages by which it is carried out, as if it were a universally accepted and regular phase of the life-history of the parasites, and they explain that relapses are due to this phenomenon. This view, of course, had the support of Schaudinn. I personally have never seen this process, although much attention was given to the matter; nor have I met with any fellow-worker in India who has observed it. I should, however, be very reluctant to declare that it does not occur. All I am prepared to state is that the proof so far advanced is not sufficiently convincing to myself.

The ingenious suggestion that large doses of quinine arouse in the malaria parasite the instinct to seek more healthy surroundings and bring about development of the sexual stage is rather captivating, and recalls one of Sir Patrick Manson's original suggestions as to how the malaria parasite was brought into contact with the mosquito.

Disappearance of Parasites after Large Doses.

The acceptance of this view would necessitate the brushing away of some difficulties. For example, it sometimes happens that, after a few large doses of quinine, malaria parasites cease to be visible altogether. The observations made in the Malaria Depôt, Dagshai, a non-malarial hill station in India, show that in some cases malaria parasites permanently disappear from the peripheral circulation after a single intravenous injection of quinine. This sudden disappearance of malaria parasites in some cases under large doses of quinine has been a mysterious phenomenon and intrigued me for many years. At one time I was disposed to consider that quinine not only poisoned the asexual parasites, but had likewise an appreciable toxic influence on the sexual forms. This view appeared to be supported by some observations I carried out in 1909–1913, when busy endeavouring to frame measures to reduce malaria in certain cantonments in India and Burma. I will take the liberty of quoting a few out of over a hundred observations bearing on this point.

CASE 1.—On July 8th, 1909, a Garhwali, aged 22 years, anæmic, with a spleen extending to 2 in. below the left costal arch, came under observation for the first time at 10.30 A.M. Had been having paroxysms during preceding 12 days. The blood was examined and found to contain enormous numbers of benign tertian parasites. In about a quarter of an hour swarms of microgametes were flagellating; in one field (1/16 obj., No. 4 eye-piece) nine were counted, and in 25 minutes free microgametocytes were moving about on the slide. The percentage of red cells infected was 5·5, of which approximately 2·5 were gametes. There were 27 per cent. of large monuclear cells, of which 3 per cent. contained hæmozoin. One 10-grain dose of quinine in solution was given by the mouth at once and repeated at 4 P.M; a third 10-grain dose was given at 9 A.M. on the ninth, when the blood was again examined, the temperature being normal. Not a single parasite could be found in seven stained slides examined, nor in four thick-film preparations; there was still 26 per cent. of large mononuclears, but none of those seen contained pigment. The blood was examined every 12 hours for five consecutive days with negative results.

CASES 2 AND 3.—On June 26th, 1909, two Gurkha lads, aged about 17 and 18 years, were admitted into hospital both with subtertian infection. In both every field of the examined blood contained malignant tertian "rings"; the percentage of infected red cells in one was 2·8, and in the other 2·4. In the former 25 crescents were counted on an average on four slides, and in the latter 11. The younger boy was pale, and his spleen was considerably enlarged. Each got 30 gr. of quinine in solution on the 26th. On the morning of the 28th neither rings nor crescents could be found in the blood of the elder boy, and only two to a slide in the younger; five slides in each were examined. Later, microscopical examinations of the blood once a day for a fortnight were entirely negative in both.

CASE 4.—On Sept. 29th, 1906, a Gurkha, aged 25 years, returned from Assam (where he went on furlough) with an enlarged spleen, anæmia, and regular paroxysms of quartan fever. The blood contained numerous asexual quartan parasites (0·4 per cent. of the red cells were infected) and about eight spherical gametes were found on every slide. On the 29th 30 gr. of quinine in solution were given. On the 30th examination of seven stained smears of blood was quite negative, and continued to be so for 12 days, after which the man was discharged to attend daily for quinine for three months.

The disappearance of the sexual forms from the blood one now looks upon as an indirect effect of quinine only, believing that the drug kills off most of the asexual forms and thereby reduces the number that could develop into sexual forms. I am still, however, not prepared to state that quinine has no action on sexual forms. There may be explanations other than the assumption that this comparatively sudden disappearance of malaria parasites from the blood is due to the toxic influence of quinine; and I should be grateful to anyone, who reads this and has considered the point under reference, if he would give me the benefit of his observations.

Quinine and Sexual Forms of Parasites.

My own observations disagree with the statement that the sexual forms of malaria parasites do not occur in

[1] A Statistical Investigation of Records of Treatment and Blood Examination in 18,731 Cases of Malaria, THE LANCET, 1921, i., 107.

cases of malarial fever untreated by quinine. When I was a regimental medical officer we had about 100 furlough men (Gurkhas) returning at the same time every year from Nepaul with malarial infection, 25 per cent. of whom had sexual forms of parasites in their blood at the time of the first observation; none of these had received any quinine during the five months they were on leave. This is also borne out in almost every Indian village in endemic malarial districts during the malarial season. I am in complete agreement with the statement that the disappearance of crescents and other sexual forms from the blood indicates that progress is maintained in reducing the infection, and that the supply of asexual forms to provide sexual forms has been cut off. The entire disappearance of all forms, sexual and asexual, is also most satisfactory, and appears to show, as the authors of the paper under reference state, that "the infection has been hard hit and so reduced in numbers as to justify a favourable prognosis." Much of what one has stated above is more forcibly and tersely expressed in their penultimate paragraph: "It is clear that the eradication of crescents"—and, it may be added, of other sexual forms—"is satisfactorily secured by the control of the asexual generation of malaria parasites by adequate quininisation."

Initial Infection, Reinfection, and Relapse.

I have employed the large-dose method of quininisation since 1904, and advocated it in all hospitals with which I have been connected since that time. Anterior to the date mentioned I cannot remember following any definite cut-and-dried scheme in using quinine in the curative treatment of malaria. Each case seems to have been treated on its own merits, and although in exceptional cases this has still to be done, I believe we are now in possession of data that give us a basis upon which to formulate a much more rational method of administering the drug. The scheme I worked out in 1904 is detailed elsewhere; it has been altered little since. This large-dose treatment holds good whether we are dealing with initial attacks, reinfections, or relapses. In endemic malarial places, where fresh infections are constantly liable to occur, it is practically impossible for the ordinary medical officer, who is not a malaria expert, to decide whether a particular case is one of reinfection or relapse. A careful scrutiny of each case, with close microscopical examination of the blood, and a history (if any) of the course of the infection, may give information for inferences; but such deductions lack accuracy. The usual indication of a reinfection would be a record to the effect that the preceding attack was caused by a species of parasite different from the one found in the blood during the attack under observation; this does not necessarily mean a reinfection, as a former infection may have been a mixed one, and one or more species of parasite may have died out. The point is not very material, however, as the same course of quinine treatment is indicated whether the case is a relapse, a reinfection, or an initial infection.

Curative Value of Quinine.

It is earnestly to be hoped that the remarks of Majors Johnson and Gilchrist on the limitations of curative quinine treatment in malaria will be fully considered by those who have to treat malaria and organise the control of malarial infection. It is obvious that it has a marked influence on preventive measures likewise. I am not disposed to go so far as to say that quinine is palliative only in the treatment of malaria—in a large percentage of cases it is absolutely and permanently curative, in the absence of reinfection. It does, however, fail to prevent relapses in a higher percentage of cases than was formerly thought—even when given persistently and intensively. It is this failure to eradicate the infection in some cases that has led medical officers to seek other drugs—something more efficient than quinine. In more than one military hospital I have during the last ten years, and especially during the war, felt myself obliged to interdict the use of salvarsan, kharsivan, and such-like drugs, in the treatment of subtertian and relapsing simple tertian, when this was adopted to the exclusion of quinine. I daresay my action was considered arbitrary by the younger medical officers who were trying experiments on our soldiers, but I believe the prohibition was justified; anyhow, one was influenced by pragmatism and the conviction that in quinine we possess a remedy to be better trusted to render our troops efficient in a shorter time than could be effected by the other drugs named.

Practically universal experience indicates that quinine at present is the best drug as a remedy in malarial fevers. This was claimed for it by the father of British tropical medicine, Sir Patrick Manson, almost a generation ago, and that position for quinine remains unassailable to-day. As previously remarked, quinine does undoubtedly fail in a certain proportion of cases for reasons that we are at present unable to understand; this has led to its being disparaged by some medical men and to a certain extent discredited in the lay press. Personally I feel that every medical man who denounces the curative use of quinine in malaria takes upon himself a serious responsibility. I can recall the evil effect of the announcement in India that quinine precipitated attacks of blackwater fever. Without pressing the point further, it may be reiterated that we have overwhelming evidence proving quinine to be the drug *par excellence* in malaria, and until something better is discovered its merits should not be depreciated.

Whilst my faith in quinine as a curative of most cases of malarial infection remains unshaken, I confess that I no longer hold it to be an infallible remedy for all cases of malarial infection and all complications arising out of such infection. I have of late years often asked myself whether the search for other drugs in the treatment of malaria has been carried out with the assiduity and perseverance that it deserves. It is quite possible that in the future we may find some drug superior to quinine as a plasmocide; again, someone may discover an external application much more permanently repellent to mosquitoes than those now in use, or a plant may be revealed that mosquitoes do not like, cultivation of which will prevent their invading the precincts of our habitations, any or all of these things may occur; but until this antimalarial millennium arrives our sheet-anchor in malaria, both curatively and prophylactically, is quinine.

Tendency to Relapse in Benign Tertian.

It was interesting to note that Majors Johnson and Gilchrist observed a special tendency to relapse in benign tertian. Many who have studied the question of malaria in India for years know that benign tertian is on the whole epidemiologically a more serious form of infection in that country than malignant tertian as regards morbidity and, indirectly, as regards mortality. I referred to this point in a recent communication in THE LANCET,[2] and I need not now labour it.

Their observation that a mixed infection is more difficult to cure than a single infection will be read with much interest by many. Around this point crowd several questions calling for investigation, questions to which further reference here would be inopportune.

Syphilis and Malaria.

Their remark to the effect that the coexistence of syphilis and malaria retards the cure of malaria and the prevention of relapses by quinine, and brings about more than usual anæmia, is in accordance with one's own experience. It may be remembered by some old workers in malaria that a generation or so ago it was often stated that syphilis and malaria did not coexist. I made some remarks on this as far back as 1891, and in 1910 stated as follows: "Syphilis and malaria may not only occur in the same person, but the one disease aggravates the other, and unless the malaria is promptly treated the dual infection is a very serious matter for the patient."

Establishment of Certainty as to Malarial Infection.

In all endemic malarial places the first point to establish is that the patient is suffering from malarial

[2] Researches on the Treatment of Benign Tertian Fever, THE LANCET, 1920, i., 1382.

infection before saturating him with quinine. Every hospital of any size should have the appliances and personnel to determine this. Many people in India who are not suffering from malaria are given huge doses of quinine over long periods. I inspected a hospital on July 6th, 1919, and saw a patient who was suffering from intermittent pyrexial attacks for 12 days. His blood had been examined and found negative as regards malaria parasites on two occasions. Blood cultures had been made and were negative to Eberth and the paras. The medical officer was greatly puzzled. The man had been suffering from toothache off and on; to this little attention had been paid. A dentist was called in and extracted a wisdom tooth; at the same time he opened a putrid alveolar abscess and brought the pyrexial phenomena to an end. This man had received 360 gr. of quinine by the mouth and four intramuscular injections of 10 gr. each of bihydrochloride of quinine. In a letter to the *British Medical Journal*[3] I mentioned the personal experience in July, 1917, of being given 45 gr. of quinine daily for three days when suffering from sandfly fever due to mistaken diagnosis.

Unsolved Problems.

There are still a great many unsolved problems connected with the treatment, ætiology, and epidemiology of malaria; some are of fundamental importance, and others, at present appearing to possess merely academic interest, may when completely elucidated be shown to have important bearings on the practical side of malaria work.

A great deal has been done since Sir Ronald Ross made his immortal discovery, and much excellent work is being carried on at the present day. One is, however, tempted to consider that something is lacking—some want of a sense of proportion as to the importance of the questions under investigation. As far as India is concerned, one hopes that the recently formed Ministry of Health will create in its Research Department special groups of expert malaria workers who will initially tabulate the unsolved problems of malaria, place them in order of precedence as regards their practical importance in the treatment and prevention of malaria, and work at them continuously until they are wiped off the slate.

The control of malaria in tropical and subtropical countries is now, as in times past, the most important economical problem of the day. As I have elsewhere stated, "this aspect of the question of malaria has been much neglected and its importance has been obscured by relatively insignificant entomological side issues."

SQUINT, MANCINISM, AND TUBERCLE.*

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IN a book[1] published not long ago it was maintained that squint was about three times commoner in consumptives, and probably also in consumptives' parents, than in the non-tuberculous; that such squint seemed to favour the left eye; and that tuberculous squinters were left-handed, and gave a family history of left-handedness oftener than did non-squinters. These five points (which, so far as I know, are new) it is proposed here to examine further in a larger material.

The first comparison was as follows: Ordinary concomitant strabismus in 500 adult or adolescent consumptives, all sputum-positive, 1·2 per cent.; in a comparable control, only 0·4 per cent. Two criticisms[2] were directed to this latter figure—namely, that squint in the ordinary run of children was much commoner than 0·4 per cent. But neither my consumptive nor my control series contained any children. Moreover, a record of the incidence of squint in the young male adult population of this country, hitherto lacking, has since become available. J. D. Comrie[3] found in 10,000 military recruits (whom he stated to represent a fair sample of the community) 31 squinters—i.e., 0·3 per cent. This is remarkably close to my 0·4 per cent., because my controls comprised both sexes, and squint is allowed to affect women a little more than men—at all events girls more than boys. The proportion in controls having been thus confirmed, it seemed desirable to test also the proportion—namely, 1·2 per cent., in consumptives. Through the courtesy of Dr. J. B. McDougall and Dr. J. Rennie, and of the superintendents of various Yorkshire tuberculosis institutions, I examined a fresh series of consumptives (not all sputum-positive), finding in 352 men and 148 women 6 squinters (again 1·2 per cent.). These 6 were 4 male, 2 female, the defect being thus rather commoner in the latter sex. So that the previous comparison was exactly confirmed, whilst further corroboration resulted from renewed search of the literature. Luzzatto[4] has been struck by the frequency of lymphatic and strumous types amongst ordinary squinters. In 200 patients at a hospital clinic he found two with squint, and among squinting school children a very large majority showing the coexistence of ordinary strabismus with plain evidence of scrofulosis. As regards paralytic strabismus, 14 out of 15 children thus affected were of lymphatic-scrofulous type. All this was quite independent of any scrofulous ocular affection likely itself to cause squint.

Age.

Again, to clear up the question of age, I have examined 343 cases of juvenile phthisis in Yorkshire (191 boys, 152 girls). There were 11 squinters, 4 boys and 7 girls, yielding a percentage of 2·0 for the former, 4·6 for the latter; or combined, 3·2 per cent. To compare with ordinary school children in this country, take Bishop Harman's recent London figures[5] of 1·0 per cent. for boys, 1·8 per cent. for girls; or combined, 1·5 per cent. J. Priestley and B. Richardson (loc. cit.), for 20,000 Staffordshire school children during a recent eight-year period, give a combined percentage varying yearly from 1·1 to 1·7, girls being slightly more affected. My own control figures for South Yorkshire schools are about the same. Not stopping, then, to do more than note the apparently new fact that squint is greatly commoner in children than in adults, we reach the first conclusion that *in the subjects of some forms of tubercle squint is as much as twice or thrice as frequent as in normal persons.*

Excessive Squint in Certain Forms of Tubercle.

What forms? In my book—remembering the very few cases seen when once going round the Royal Sea Bathing Hospital, Margate—I had surmised that squint was not in excess in bone and joint tubercle. In a subsequent investigation[6] of the stigmata of predisposition to that affection, I had found in 350 children from the Alton and Sheffield hospitals for bone and joint tubercle, figures for squint actually below the normal estimates just quoted. I was collecting cases of tuberculous adenitis when I came on Luzzatto's paper. So far my results confirm his. In 50 males there were 3 squinters, and in 55 females 2 squinters—a combined percentage of 4·7, which is very high indeed when it is remembered that not quite all of these were children. Of tuberculous peritonitis I have not yet nearly enough cases to judge, but up to now, in 46 cases, 21 of them girls, no instance of squint has occurred. It seems fair, then, to conclude, secondly, that *squint is excessive in lung tubercle and in lymphatic gland tubercle, but not in bone and joint tubercle.*

As to consumptives' parents, taking unselected patients—non-squinting, of course—and their non-tuberculous fathers and mothers, I found 3 squints among 112 mothers, none among 13 fathers. Again a proportion very much higher than the normal (0·3 or 0·4 per cent.). Thirdly, then, *squint is excessive amongst the clinically non-tuberculous mothers (at any rate) of non-squinting consumptives.*

Eye Affected.

I have now particulars of 65 phthisical squinters; 48 of these squinted with the left eye. As to the normal lateral distribution of squint, the text-books appear to be silent. So I have collected 62 non-tuberculous

[3] Brit. Med. Jour., March 27th, 1920.

* Address to Yorkshire Tuberculosis Society, January, 1921.

squinters, largely from local schools. Forty of these were left-sided. The difference (73 per cent. as against 64 per cent.) seems insignificant. However, to explore the influence of age aforementioned on squint incidence, both these series have been divided into over and under 16 years old. Over 16: 42 phthisical gave a percentage of 71 left-eyed, 25 non-tuberculous a percentage of 52. Under 16: 23 phthisical gave 78 per cent., 37 non-tuberculous 72 per cent. In all the squinters, agreeably to accepted teaching, the convergent form of strabismus was much commoner than the divergent. Divergent strabismus occurred very much oftener in phthisical than in non-tuberculous girl children. However, the number of these cases is unavoidably so small that the above figures are not worth more than mention. Still, it would appear quite likely that left-eyed preference is a characteristic of squint generally, not only of squint in the tuberculous.

Mancinism.

Left-handedness, or mancinism, occurs in 2 per cent. to 4 per cent. of the general population. I found[1] it in 2·7 per cent. of non-squinting consumptives. In 60 squinting ones it occurs 4 times (thus in 6·6 per cent.); there are, in addition, 5 cases of ambidexterity. All the left-handers are left-eyed squinters, all the ambidexters right-eyed. Of 60 non-tuberculous squinters, 6 are left-handed (10 per cent.); again, all the left-handers squint with the left eye. There are, too, 2 ambidexters, with left divergent squint. As to sex, in both series the mancinism is much more frequent amongst the males; this is in accordance with what is known of the peculiarity in question (Ogle).

The frequency of a family history of mancinism in the general population does not seem to be known. It is pretty certainly nothing like so high as in left-handers. Ogle stated that out of 57 left-handers 27 know of left-handed relatives—that is 47 per cent. Now out of the above 60 phthisical squinters, 21 know of left-handed relatives—that is 35 per cent. Out of 60 non-tuberculous squinters, 22 know of left-handed relatives—that is 36 per cent. All the left-handed squinters in the phthisical series know of left-handed relatives, and two-thirds of the non-tuberculous left-handed squinters. Right eye and left eye, the latter kind gives a slightly more frequent family history of mancinism. It is reasonable to conclude, then, fourthly, that, *whether in phthisical or in non-tuberculous subjects, left-eyed concomitant strabismus is somewhat associated with mancinism and with a family history of mancinism.*

Deductions.

These four conclusions may be shortly examined and collated. To say that tubercle causes the squint found along with it is inadmissible, because (*a*) the history was always of the squint coming first; (*b*) there were signs of phlyctenules, opacities, &c., in very few of these patients; (*c*) Luzzatto, an ophthalmologist, excluded such a possibility from his cases; (*d*) bone and joint tubercle, in which there is no excess of squint, is by no means free from tuberculous ocular complications. Indeed, the symptom of photophobia seemed to me, when working at Alton, much commoner than in tuberculous children at a dispensary, naturally from the exposure to strong light necessary in heliotherapy.

Squint and a General Tendency to Abnormality.

Nor, of course, on the other hand, can squint be a direct causal factor in tuberculosis. However, its association with that disease should not surprise us, for the insane* are highly subject to both affections. I have shown[1] that it is in just those forms of insanity in which squint is commonest that tubercle is most rife. Squint is a mark of general tendency to abnormality. Ch. Féré[7] describes it as common in neurotic families, A. Crzellitzer[8] as familially related with deaf-mutism. It is also excessive amongst albinos and in their otherwise normal relatives—an incidence which parallels the incidence in phthisis above described; that is, in excess not only in consumptives, but also, at any rate, in their mothers. This point is of distinct service in the diagnosis of phthisis. The possible left-sided incidence of squint recalls the sinistral incidence also[9] of polymastia, another abnormality which has been described as in excess in consumptives.[10] All this makes more probable the association, too, of squint with mancinism, for mancinism (C. Lombroso, Féré) has been reckoned among the stigmata of degeneracy. Savages, lunatics, and criminals show excess of mancinism (Merkel[11] and others), also sexual inverts (M. Hirschfeld). A certain relationship exists between mancinism and stammering; at least, 2 of my 62 non-tuberculous squinters stammer. Papers on this point will be within the recollection of readers. Here, then, is distinct suggestion of the development of clinical tuberculosis being favoured by an abnormal constitution, of which squint is a sign. And such suggestion becomes strengthened when we consider the above-described distribution of squint among the various forms of tuberculosis; that is, in excess in consumption and in scrofula, not in excess in bone and joint tubercle. For it would appear likely that one peculiarity of the tuberculosis of savages, and of the insane too, is excess of lung or lymphatic gland tubercle, deficiency of the osseo-articular form.

Tubercle in coloured and uncivilised communities.—The evidence as regards these communities may be thus summarised. In most accounts lung tubercle is mentioned and no other variety. British colonial reports have a classification of tuberculosis, but it is hardly ever filled in. In one for Natal,[12] however, lymphatic glandular tuberculosis is mentioned as very prevalent. In another for Basutoland[13] the totals are: phthisis pulmonalis, 117 cases; glands, 109; lupus, 43; tabes mesenterica, 7; other forms of tubercle, including bone and joint, nil. Ziemann,[14] for Siam, mentions the lungs and intestines as affected. For Samoa, Togo, Anecho, and the Cameroons, his figures add up to: phthisis pulmonalis and air-passages, 98 cases; bone and joint, 28; other organs, 2. Westenhoeffer,[15] in Chili, divides 59 deaths from tuberculosis into 45 phthisis, 9 urogenital tubercle, 3 generalised, 1 tuberculous empyema, 1 primary intestinal. Bone and joint forms are unmentioned save that one case of miliary tuberculosis had a slight tuberculous dactylitis. Another autopsy record is that of A. Borrel,[16] on Senegalese troops brought to France. In 31 cases, bone and joint lesions are only mentioned twice, and these were evidently secondary to copious tubercle elsewhere; glandular enlargement was almost uniform as the initial manifestation, and the lungs were badly affected in all. Colonel Cummins[17] enthusiastically praises Borrel's general description, and says it applies exactly to the tuberculosis of the Sudanese. Seale Harris[18] states that tuberculous disease of bone and joint is of common occurrence among Alabama negroes, although the lungs were most frequently attacked; he agrees with Osler that tuberculous peritonitis is commoner in black patients than in white. Another writer[19] opines that tuberculosis amongst Sioux Indians does not differ at all from ordinary tuberculosis. E. Metchnikoff,[20] dealing with the Russian Kalmucks round Astrakhan, gives osseous and glandular tuberculosis as commoner than phthisis; he states that these tribes are developing some immunity to the disease. Lastly, Professor Külz,[21] in a full and excellent article on the peculiarities of tuberculosis in Pacific islanders, states that while phthisis, scrofula, and miliary tuberculosis are very common, "alle die Zustände selten sein werden, die bei uns gewöhnlich erst nach längerem Krankheits-bestand aufzutreten pflegen, wie Knochen- und Gelenktuberkulose." In the above it is significant that the exceptions to the general rule just traced are nearly all in races which have been longer in contact with civilised communities, as in Russia and North America, and who therefore may be

* To ascribe the tubercle of insane persons to bad hygiene flies in the face of the following facts: 1. Its extraordinary frequency, at least eight or ten times that amongst the sane; a disproportion twice as great as between the lower social classes and the upper ones. 2. Its scarcely lessened prevalence in new asylums. 3. The open-air life there, and the general fatness of the inmates. 4. The prevalence amongst the insane of pulmonary gangrene. 5. The comparative freedom from tubercle and gangrene of asylum attendants.

expected to be in process of immunisation—mainly racial, by selection in Darwin's and Archdall Reid's sense, but possibly slightly individual as well.

Tubercle, insanity, and mental deficiency.—As regards the insane and mentally deficient, one cannot cite public sources for the distribution in question, at least as regards this country, for even an inquiry like that of the Medico-Psychological Committee on Tuberculosis in 1901 only speaks of "active tubercle," without mentioning its location. But Dr. C. Caldecott, medical superintendent of Earlswood, an institution the age of whose patients is that common in bone and joint tubercle, is kind enough to write as follows:—

"No doubt *pulmonary* tuberculosis is the principal form in my experience which affects the mentally defective. We really see very little of bone and joint trouble. ..... We see a good deal of glandular tubercle, and many of the little Mongolian patients seem to suffer primarily from an abdominal form of tuberculosis."

Dr. J. Shaw Bolton, of the Wakefield Asylum, writes that two forms of tuberculosis are common in the insane, lung tubercle and disseminated tubercle, both often associated with intestinal ulceration, and the latter also with enlargement of the lymphatic glands of the chest and abdomen. Affection of the ordinary lymphatic glands of the body is rare, as is bone and joint tubercle. To a third and last inquiry, addressed to another large asylum, the answer was returned that phthisis is "a long way the most common," abdominal tubercle infrequently met with, lymphatic gland tubercle uncommon, and bone and joint tubercle rare. Thus there is evident agreement in location of the tuberculosis of savages and of the insane—the disease in these two classes has other points of similarity, of course—and this location is very much that characterised by excess of squint.

However, it will not do to say that pulmonary phthisis and scrofula are sometimes predisposed to by a degenerate or atavistic want of resistance to the bacillus, shown by squint, and peculiar to these two forms of tubercle, because in bone and joint disease one finds in excess other degenerate or atavistic stigmata. I found[6] ichthyosis, persistent lanugo, and red hair to be so. Bowen[22] and Renshaw[23] have separately advanced an atavistic theory of origin of ichthyosis—a view further confirmed by the existence in Europe of a tribe in which it is the normal condition. I gave Darwin and Lord Avebury as authorities for the atavism of red hair, and, indeed, Eusebius, Broca, Topinard, and recently Kohlbrügge,[24] might have been added; while several writers have noted the affinities of red hair with albinism—indeed, the affinities are like those of squint, for red hair is not only common in albinos (cf., the rufous albino), but also in normal relatives.

Perhaps, then, squint in tuberculosis may be the sign of some abnormality predisposing to phthisis and scrofula, not to osseo-articular lesions; thus an abnormality in connexion with the respiratory tract, say; most likely of its lymphatics, the lymphatic system, according to Virchow, being the one most subject to variation. While, conversely, red hair (not excessive in phthisis, according to F. C. Shrubsall[25]) may be the sign of another abnormality specially predisposing to bone and joint tubercle, possibly undue skin permeability. Ichthyosis, by the way, is in excess both in phthisis and in bone disease. However, there are difficulties in the way of this hypothesis. One is the view that osseo-articular tubercle is secondary to tubercle of the bronchial glands. Another, that red hair is in excess in scrofula as well as in bone and joint disease.

Conclusion.

These are dark matters. Probably both factors act, with others as well. There is a general constitutional susceptibility; there is also some special vulnerability-producing anomaly. I have not enough cases of tuberculous squinters to judge whether or no nasal defect is associated. But be the exact pathogenesis as it may, there can be small doubt of the existence, in more than one form of tubercle, of unmistakable stigmata of predisposition; unmistakable, but, like other signs of that sort, strangely neglected and ignored. Take only the significant phenomenon of squint being much commoner in ordinary school children than in ordinary adults. It might have been predicted; we know from school medical officers that very few working-class children get cured of squint, but we also know that an undue proportion of these squinters are destined to find the asylum and the prison. What use does preventive medicine make of that knowledge? Now add that an undue proportion will also become tuberculous or the mothers of the tuberculous, and that into the bargain there is probably a considerably higher general mortality amongst them than amongst their school fellows. The neglect becomes serious. Of such neglect one great cause is the current undue regard for pathology and bacteriology, in spite of their many failures and false claims in tuberculosis; and the juvenile conception that obtains of research as something necessarily involving the apparatus of the physical laboratory—unfortunate reversal of precedence between temperament and technique!

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THE INCIDENCE OF CONGENITAL SYPHILIS AMONG THE NEWLY BORN.[1]

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THE object of this investigation was to determine if possible the incidence of congenital syphilis among the newly born in a mining town and an industrial town in one of the Midland counties. The cases were entirely unselected, and in no instance had either parent been treated for recognised syphilis. It must be generally admitted that our knowledge of the transmission of syphilis is very incomplete, and that the term "congenital syphilis" is very loosely applied. Cases are dubbed congenital syphilis on the flimsiest of data, while others are missed through want of proper appreciation of symptoms slight in themselves, but the only visible manifestations of this insidious disease, where a Wassermann reaction might have enlightened the practitioner as to the true state of affairs.

John A. Kolmer, of Philadelphia, who has published much original work on syphilis, holds that—

"Every untreated or inadequately treated syphilitic of either sex, and particularly the woman of child-bearing age, is potentially capable of transmitting the disease, and that the number of such persons must be appallingly large," and secondly, that "it would appear quite certain that the fœtus possesses no natural resistance to infection with *Treponema pallidum* in so far as its own tissues are concerned, and that it may be infected through the mother at any time from conception to late in pregnancy."

[1] Report to the Medical Research Council on the Wassermann reaction of placental blood in a series of 340 unselected cases in a Midland county.

Any figures based upon the examination of placental blood alone will give a probable under-estimation of the amount of congenital or prenatal syphilis in the general population. Dr. P. Fildes, in a report to the Local Government Board on the prevalence of congenital syphilis among the newly born in the East End of London, 1915, states that "only a minority of syphilitic women induced this positive reaction in the umbilical cord serum," and this view is held by Dr. Amand Routh (Charing Cross Hospital), Dr. Morna Rawlins (Guy's Hospital), and A. F. W.

Collection of Material.

For the collection of the material employed in this investigation, for the mining area two midwives with a large working-class practice were chosen, whose technique in midwifery and trustworthiness in carrying out instructions could be relied on. They were instructed that the cases were in no way to be selected, and that with each case a few essential particulars were to be sent.

The particulars demanded were as follows: name, age, address; date of marriage, number of pregnancies, abortions or miscarriages and period; patient's health, husband's occupation, and husband's health.

The blood was taken from the placental end of the umbilical cord immediately after it was severed from the infant. Sterilised collecting tubes were supplied from the county laboratory, and it was impressed upon the midwives that strict aseptic precautions should be taken in the collection of the specimens. These specimens were then posted to the county laboratory, and after removal of sufficient serum for S. M. R. were forwarded to the Central Hospital, Lichfield, for A. F. W. The period of time covered by the investigation was 16 months (1918–19).

Procedure of Investigation.

The procedure of the investigation into the specimens was decided at a preliminary meeting of the two investigators, after which there was no comparison of notes and no discussion about the results until the investigation was completed. It was decided that each investigator should employ a different method of test; these having been chosen, the same standard was to be used throughout the investigation, and the tests were to be batched along with the ordinary routine Wassermann testing at each laboratory to ensure absolute impartiality. Thus S. M. R. employed Professor H. R. Dean's technique, in which the complement factor is constant with variations in serum, whereas A. F. W. used Colonel L. W. Harrison's method, in which the serum factor is constant and the dose of complement varies. It is thus obvious that as wide a field as possible of technique and experience was brought to bear upon each individual specimen.

It is regretted that it was impossible to get later specimens from either mother or child; it will be readily realised that it was inadvisable in many of the cases to acquaint the parents with what was being done, owing to the risk of misunderstanding and family recriminations. In a considerable number of instances S. M. R. visited the mother to make tactful inquiries into her obstetric history, but owing to the absence of any cursory physical signs of syphilis in parent or child she was either refused or deemed it inadvisable to press for a further blood examination.

Mining Area: Summary of Results.

The result of the investigation into the 300 cases collected in the mining area may be summarised as shown in the table.

In 284 cases, or 94·6 per cent., the results of both workers were identical, 10 cases, or 3·5 per cent., being definitely positive.

1. In 5 cases A. F. W. found a trace of complement deviation which was not found by S. M. R. As this was insufficient reaction to be reported as even a partially positive result, he is of opinion that it was probably due to delay in transit, causing increased deviability of the serum. 2. In 5 cases there was marked disagreement, S. M. R. reporting two specimens positive which A. F. W. reported negative, while 3 S. M. R. reported negative which A. F. W. reported positive. Whether this class of five is due to mistakes in technique or variations of the same on the part of one or the other is so open to debate that it is beside the point to discuss here.

Table of Cases Found Positive by both Observers.

No.	Age	Month and year of marriage.	No. of preg.	Patient's health.	Husband's occupation and health.†	S. M. R. result.	A. F. W. result.
P5	30	May, '04. Dec., '17.	4	Not good. Very anæmic.	Collier.	1-80 ++++++	++
P26	32	May, '04.	6*	Has had bronchitis and asthma, rheu. fever, infl. lungs.	Labourer	1-10 ++	++
P77	—	Oct., '01.	8	Had anæmia.	Police.	1-10 ++	±±−
P150	32	Dec., '10. Dec., '17.	4	Good.	Collier.	1-40 ++++	±±−
P152	19	Mar., '18.	—	Had gastric stomach.	,,	-20 +++	++
P178	28	Aug., '08.	4	Good.	Missing soldier.‡	1-20 +++	++
P251	35	June, '14.	2	,,	Dis. soldier.	1-10 ++	++
P258	23	Mar., '19.	—	,,	Collier.	1-5 +	+−
P273	28	Dec., '11.	2	,,	,,	1-5 +	+−
P285	33	Unmarried.	5	,,	—	1-20 +++	++
D39	—	1918.	1	,,	Machine ruler.	1-80 ++++	++

* 1 Abortion, 6 weeks. † In each case the husband's health was good.
‡ Patient had a child by another man.

Two specimens cannot be reported on by both workers owing to the control tube not being completely hæmolysed. A. F. W. reported one such failure in a case reported positive by S. M. R., while S. M. R. reported one control tube not hæmolysed in another case which A. F. W. reported negative.

One specimen could not be reported on by either worker.

Industrial Area: Summary of Results.

A similar investigation was also carried out amongst the patients of a large charity practising midwifery in an industrial town in the Midlands, but owing to circumstances over which the investigators had no control only 40 specimens were sent. In this series one case was found positive by both observers, a percentage of 2½. Unfortunately, owing to the difference in the numbers of specimens from the two towns no sort of comparison into the infection of the two areas can be deduced. At the same time it was deemed more illustrative to keep the records apart, as the incidence of 1–40 in the latter town would unjustifiably reduce the positive percentage given in the former series.

Conclusion.

It must be realised that the number of specimens dealt with is too small to draw any definite conclusions from, but the percentage of positive reactions obtained is significant and calls for further investigation in wider areas: first, among unselected cases, and secondly, from those where either parent is known to be infected, so that the reliability of the test may be definitely gauged from the results achieved. The latter investigation could easily be arranged in the lying-in homes of infected patients. When one takes into consideration that women in the latter stage of pregnancy tend to give a much less positive Wassermann reaction than the history of the case warrants, and that congenitally syphilitic babies tend to give a negative Wassermann reaction until a month or so after birth, whether the complement-deviating substance in the placental blood is indicative of syphilis in the mother and not according to Fildes in the child, or in the child and the mother according to Kolmer,[2] the facts are that 3·5 per

[2] Archives of Pediatrics, 1920.

cent. specimens of placental blood were found positive by two observers using entirely different methods in different laboratories, and we presume to repeat that these results are highly suggestive of the prevalence of apparently undiagnosed syphilis in the general population.

In conclusion, both workers would like to express their great indebtedness to their laboratory assistants, C. F. Peckham and Corporal R. W. Jones, Central Hospital, Lichfield. The incidental expenses of the research were defrayed by a grant from the Medical Research Council.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF MYOCLONIC ENCEPHALITIS.

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AND
E. SPENCER SCOTT, M.D., B.CH. CANTAB.

THIS dramatic and fatal type of encephalitis is so uncommon that the following case seems worthy of being placed on record.

The patient was a man of 58, free from neuropathic family taint, with an excellent personal history, active, athletic, and of temperate habits. Jan. 17th: Patient complained of sharp pain in the left shin-bone, just below the tuberosity of the tibia. There was exquisite tenderness on slight touches over this spot, but no redness or swelling. Temp. and pulse normal; no history of any local injury. During the day the pain became so intense that bone disease was suspected. Local applications of iodine and later antiphlogistine were used and aspirin was given internally. Jan. 18th: The pain and hyperæsthesia had shifted to the outer side of the left knee and extended down the leg to the outer side of the foot. The old tender spot on the tibia had gone. The patient was now restless and excited and developed sudden jerking movements of the abdominal muscles and the proximal muscles of the arms and thighs. Jan. 19th: Pain in the leg disappeared and did not recur. He was mentally confused and showed a mild delirium of toxic type. He was occasionally disoriented, and had the idea that he was in the country visiting a friend, who had, in fact, been dead for a year. Temp. and pulse remained normal. Jan. 20th: Patient was more excitable, and his delusions were more vivid; he was excited and voluble. There were well-marked spontaneous sudden myoclonic jerks, chiefly of the abdominal muscles, but also affecting the lumbar, lower pectoral muscles, and at times the muscles of the upper arms and thighs. These occurred irregularly at the rate of 14–15 per minute, and produced sudden grunting respiratory movements. The optic discs, pupils, and cranial nerves were normal. There was no motor weakness of the limbs or trunk, but voluntary movements were abnormally rapid and jerky. The knee-jerks and ankle-jerks were normal and the plantar reflexes flexor. The abdominal reflexes were absent. Kernig's sign was negative and there was no cervical rigidity. The temperature was normal, but the pulse was beginning to rise and reached 112. Heart, lungs and abdomen, and urine were normal. It was attempted to induce a fixation abscess by means of 20 minims of oil of turpentine injected into one deltoid muscle. Urotropine, 10 gr., was administered by the mouth six-hourly. The temperature rose the same evening to 100°.

Jan. 21st: Patient was distinctly worse. T. 99°–102°; P. 120. He slept badly in spite of medinal, chloral, and bromide. The myoclonic jerks were more severe, and the delirium more intense. Incontinence of urine was now present. Jan. 22nd: T. touched 103° during the night, but after a hot pack it fell gradually to 99·8°. Patient still mentally confused and completely disoriented, but replied to questions and had no paralysis. The sudden myoclonic jerks were more marked than ever, occurring irregularly, chiefly in the abdominal muscles. Knee-jerks normal. On examination of cerebro-spinal fluid no excess of pressure was found. It contained 5·38 lymphocytes per c.mm. and was free from organisms. 10 c.cm. of the fluid was reinjected into the spinal muscles at the time of lumbar puncture in the hope of furnishing an autogenous vaccine. Later in the evening the patient became lethargic and the knee-jerks could no longer be elicited. Jan. 23rd: The temperature ranged between 104·6° and 101·8°. The pulse steadily rose to 160 and the respirations to 45–50. The myoclonic jerks diminished in intensity and disappeared. Jan. 24th: T. 104°, P. 160, R. 50. Later the pulse became uncountable, and the patient died with a temperature of 103°. No autopsy was obtained.

Remarks.

The foregoing case corresponds in all essential features with those already described in 1920 by Sicard and Kudelsky[1] in Paris and by Ellis[2] in London. Its diagnostic phenomena are the intense initial root-pains, succeeded after a few days by acute myoclonus and delirium of toxic type, culminating in lethargy, coma, and death. The course of the disease in this case, from start to finish, was only seven days.

[1] Bulletin de la Société Médicale des Hôpitaux de Paris, 1920, xxxvi., p. 94. [2] THE LANCET, 1920, ii., 114.

A NOTE ON THE RELATIVE ACTIVITY OF THE FAT-SOLUBLE ACCESSORY FACTOR IN COD-LIVER OIL AND BUTTER.

BY S. S. ZILVA, D.SC. LOND., PH.D. GIESSEN, F.I.C.,
AND
MASATARO MIURA, M.D. TOKYO.
(From the Biochemical Department, Lister Institute.)

THE therapeutic value of cod-liver oil, especially in the treatment of rickets, has long been appreciated by the clinician. The cause of this remarkable potency has not yet been satisfactorily explained, but the results of recent researches on the accessory food factors strongly favour the view that it is due to the presence of the fat-soluble factor in the oil. Professor Edward Mellanby's experiments with puppies point to the great probability that a deficiency of this factor in the diet is associated with the ætiology of rickets. Cod-liver oil, however, has shown itself always in the treatment of rickets to be superior to other substances which contain the fat-soluble factor. Results obtained by us in connexion with another inquiry seem to offer a possible explanation to this apparent inconsistency.

Our present knowledge of the distribution of the fat-soluble factor in nature is of a qualitative character. It is based on a technique which consists of feeding young rats on a diet adequate in every other respect, but lacking the factor. On such diet the animals decline, but on the addition of a substance containing the principle they resume normal growth. We have been engaged for some time in an investigation with the object of working out a method for the estimation of the fat-soluble factor on quantitative lines. From numerous experiments we have succeeded in ascertaining the necessary conditions under which results of a quantitative nature could be attained, and the method so far worked out, although not perfect, affords the opportunity of comparing the relative content of the fat-soluble factor in various substances with a reasonable degree of accuracy. In this investigation we had the opportunity of testing a variety of substances, and we were struck by the extremely high potency of cod-liver oil. This was specially marked in the case of a sample of crude unrefined cod-liver oil, which was found to be 250 times as potent as butter. The samples of refined cod-liver oil which we examined, although not so active as the crude oil, were also far superior in their activity to butter. It is our opinion that this superiority in potency of cod-liver oil to other substances is responsible for the remarkable results achieved with it therapeutically. Unfortunately, in order to satisfy the requirements of the public there is a great tendency to produce brands of cod-liver oil which retain little of the characteristic taste and which appear almost colourless. In order to achieve this, very drastic means may often be employed which conduce to the partial or even total destruction of the accessory factor. In this connexion one may point out the great instability of the fat-soluble factor when exposed to air (Hopkins, 1920, Drummond and Coward, 1920) and ozone (Zilva, 1920), the latter substance being very often employed as a bleaching agent in many industries. It is hardly necessary to point out the serious consequences which might arise if in the process of refining this exceptional activity of the cod-liver oil were to be vitiated or destroyed in the manipulation of certain preparations.

The expenses of this research were defrayed from a grant made by the Medical Research Council, to whom our thanks are due.

References.—Drummond and Coward (1920), Biochem. Journ., xiv., 734. Hopkins (1920), Biochem. Journ., xiv., 725. Zilva (1920), Biochem. Journ., xiv., 740.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

Repair of Fractured Mandible.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 2nd, Mr. W. G. SPENCER, the President, being in the chair, when Mr. GILBERT CHUBB showed cases and radiograms illustrating the technique employed and the results obtained in the Repair of Fractured Mandible by means of the Free Autogenous Bone Graft. An account of his demonstration will appear in a subsequent number of THE LANCET.

Mr. G. E. EDINGTON read a paper on

Meckel's Diverticulum as a Cause of Intestinal Obstruction.

This vestige of a primitive condition was found, he said, by the practical surgeon to assume some prominence in various conditions, of which the principal were umbilical fistula, intestinal obstruction, and diverticulitis. He contributed notes of four cases which illustrated the part which the diverticulum might play in the ætiology of intestinal obstruction.

The first case was that of a youth aged 17; *the diverticulum was adherent to the umbilicus and ensnared a loop of ileum.* There had been previous attacks, and death occurred within 48 hours of the operation from paralytic ileus. Two days before the patient was first seen he had been seized with umbilical pain; the bowels moved about the same time, with which occurred vomiting. Repeated enemata failed to procure further evacuation. The three previous attacks had responded favourably to enemata. Examination showed no very great tenderness; there was dullness over the lower abdomen and in both flanks. At the operation the diverticulum was seen to arise from the side of the ileum to the left of the antimesenteric border, about 16 inches above the ileo-cæcal junction, and as a thick and rounded cord it passed downwards and inwards across the ileum. Externally the cord was continuous with the gut, and internally it passed inwards behind some distended coils and then upwards in the middle line to the umbilicus, to which it was adherent. The vertical portion was found to be much distended. Its blood-supply was obtained from the mesenteric vessels, and was in a fold which sprang from the under surface of the ileum, close to the mesenteric attachment, and ran along the mesentery to the upper (jejunal) side of the diverticulum. Vomiting came on the day after the operation and later became fæculent, and the patient died on the second day.

The second case was that of a boy, aged 10 years, in whom the *invaginated diverticulum formed the commencement of an ileo-ileal and later an ileo-colic intussusception.* Eight days previously there had been vomiting and severe abdominal pain, from which the patient recovered in a few hours. Five days later there was a recurrence of vomiting and pain, and a dark motion (? melæna) was passed on the following day. On admission to hospital the abdomen was rigid but not distended, and tenderness was especially marked about the umbilicus. Under an anæsthetic a hard mass was palpable behind the right rectus abdominis muscle about the level of the appendix. At the operation the ileum was found to be narrowed and fixed downwards and backwards towards the pelvic brim, where the bowel passed into an intussusception. Beyond this point the lower ileum was bulky, and the movable contents could be felt to extend for a distance of about 6 inches into the ascending colon. The intussusception was resected. From the apex of the intussusception hung a pyriform structure 5·5 cm. long by 3 mm. at its origin and 11 mm. at its thickest part. This was cut open and found to be an invaginated Meckel's diverticulum. Death from shock occurred early on the following morning.

The third case was that of a boy, aged 7 years, in whom a *loop of bowel was constricted by the diverticulum having adhesions to the mesentery.* Operation was followed by recovery. Two days before the patient was first seen vomiting and severe abdominal pain had set in and the bowels were moved at intervals. The vomiting continued irregularly, but there was no motion of the bowels after the following day. On this day he seemed well during the forenoon and in the evening castor oil was administered. At 1 A.M. he again vomited; he was collapsed, there was no radial pulse, the pupils were dilated, he was very restless and pointed to the left side of the abdomen as being painful, and coils of intestine could be seen. At operation a loop of the small intestine was exposed, which was very dark in colour and constricted by a Meckel's diverticulum, with adhesions to the mesentery. The diverticulum was excised, as in appendicectomy, and recovery was uneventful.

The fourth case was that of a woman, aged 37 years, in whom the Meckel's diverticulum was *adherent to the umbilicus and, along with the ileum, encircled and obstructed an abnormally free ascending colon.* In this case, also, recovery followed operation. When first seen the patient had acute pain in the lower abdomen of about 20 hours' duration, followed by continuous vomiting of whatever she swallowed. Two days previously there had been a good motion, but the bowels had not acted since. There was no history of previous abdominal troubles, but she had just recovered from pleurisy. Palpation was greatly hindered by very marked tenderness over McBurney's point and the infra-umbilical region. The pulse was 68 and intermittent; the temperature was normal; the tongue was clean and the abdomen was flaccid and suggested an early stage of acute obstruction rather than appendicitis. Under an anæsthetic there seemed to be a bulky swelling behind the lower half of the right rectus. At operation the cæcum was seen to be greatly distended and the appendix was normal. The swelling behind the rectus was caused by a Meckel's diverticulum, forming a firm, bluish, sausage-like structure extending up to the umbilicus, to which it was adherent. At its lower end the diverticulum passed downwards and outwards over the front of the colon, was narrowed and showed an axial twist. A double course of small intestine was found tightly encircling the colon above the level of the diverticulum. The diverticulum was found to arise about 12 inches above the ileo-cæcal junction close to the mesenteric attachment, and there were many old peritonitic adhesions and resulting fossæ in the neighbouring mesentery. The cæcum and the lower half of the ascending colon had a complete investment of peritoneum, rendering them abnormally mobile.

In discussing the cases Mr. Edington dealt first with (1) the anatomical details of the diverticulum, and (2) the details of the obstruction.

With regard to the former, he drew attention to the fact that in two of the cases (1 and 4) the extremity of the diverticulum was definitely attached to the umbilical scar. In one case (2) the diverticulum was quite unattached and had become invaginated into the ileum and formed the starting-point of an intussusception. In the remaining case (3) a band stretched from the apex of the diverticulum to the mesentery and formed the constricting agent, and in this case there were, further, membranous adhesions. Halstead reported 69 cases of obstruction of the bowel, in 63 of which attachment of the diverticulum was noted. Of the 63, 48 (76·19 per cent.) had an attachment, and 15 (23·8 per cent.) were free. Thus an unattached diverticulum was responsible for the obstruction in less than a quarter of the cases. Analysis of the 48 cases in which attachment was present showed that details of the attachment were given in 45. The various points of attachment were: to mesentery (23), umbilicus (15), small intestine (3), omentum (1), transverse mesocolon (1), and periappendicular exudate (1). Attachment of the tip of the diverticulum to the mesentery or to the umbilicus was by the remains of the omphalo-mesenteric vessels; attachment to other points was probably by inflammatory adhesions, and this, according to Halstead, rarely occurred. Cahier, on the other hand, stated that the diverticulum normally lies free in the abdominal cavity, and that adhesions, when present, are often of inflammatory and not congenital origin. According to him adhesions may follow diverticulitis, the lesions of which are analogous to those of appendicitis.

With regard to the details of the obstruction, each of the cases of attached diverticulum presented different details.

In Case 3 the terminal cord or thread adhered to the mesentery and produced a band under which a loop of bowel was snared. In Case 1 the contracted proximal portion of the diverticulum seemed to act as a band under which a loop of bowel had passed; but, in addition, several loops had passed forwards and lay between the diverticulum and the anterior abdominal wall. It was difficult to explain the mechanics of the obstruction in this case. Possibly in the first stage the passage forwards of the ileum over the diverticulum made the proximal part of the latter taut and so allowed of the constriction of a loop lower down near the origin of the diverticulum. If this were the sequence of events it would be fair to consider the obstruction as being due partly to volvulus and partly to band. In Case 4 there was an abnormally mobile colon and cæcum which had travelled inwards behind the diverticulum and then passed down in front of its proximal part. Repetition of this manœuvre led to the relationship of parts found at the time of the operation. There was no

torsion of the colon, but the narrow proximal part of the diverticulum showed a very distinct twist. This case, he thought, must be looked upon as one of volvulus, the portion of the gut moving with the clock. In Case 2 the primary cause of the obstruction was invagination of a free diverticulum. In the cases collected by Halstead this form of obstruction occurred in seven of the 15 in which the diverticulum had no attachment.

Speaking of the symptomatology, Mr. Edington said that cases in which obstruction was caused by a Meckel's diverticulum presented little to distinguish them from acute obstruction generally.

According to Halstead, in the great majority of cases the onset was sudden and the symptoms were characteristic of acute obstruction. Porter stated that except where the umbilicus was patulous a positive diagnosis without laparotomy was usually impossible. The following signs and circumstances had been mentioned as pointing to obstruction by a diverticulum:—(*a*) Age: Halstead's statement that it usually occurred in childhood or in young adults was supported by the cases just reported. (*b*) Sex: Porter gave the proportion of males to females as greater than 3 to 1, a proportion which, he thought, supported the view that trauma was to some extent an exciting cause. (*c*) Previous attacks: Such, in minor degree, had been noted in the histories. Only one of the present cases (1) gave a history of such, but possibly there was a previous attack in Case 2. (*d*) The seat of tenderness was usually on the right side at the level of, or just below, the umbilicus, and was likely to lead to confusion with appendicitis. Halstead mentioned that where the diverticulum was attached to the umbilicus Berard laid great stress on the exquisite sensitiveness of the umbilical region. This was marked in Case 4 and contrasted with the usual signs of appendicitis; but it was also noted in Case 2, where the diverticulum had no attachment to the umbilicus. (*e*) Other malformations might, if present, give a hint as to the cause of obstruction, but their absence meant practically nothing. In Halstead's paper a review of 69 cases showed nothing beyond the presence of hare-lip in one only. In the present series of cases no external malformations were noted, with the doubtful exception of a puckered condition of the umbilical scar in Case 4.

With regard to *treatment*, these cases, showing signs of acute obstruction and simulating acute appendicitis, called for immediate operation. The obstruction being relieved, the diverticulum should be excised, and in excising care must be taken not to "borrow" too freely from the wall of the bowel and so cause a narrowing of its lumen. This precaution must be all the more observed because of the narrowing of the bowel which already existed at the seat of origin of the diverticulum.

The paper was discussed by Mr. HOWELL EVANS and Mr. GARNETT WRIGHT.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this section of the Royal Society of Medicine was held on Feb. 4th, Professor HENRY BRIGGS, the President, being in the chair.

Yearly Tenure of the Office of President.

Mr. COMYNS BERKELEY spoke in support of a resolution, already passed by the Council, that the President should hold office for one year only. Mr. Berkeley explained that the resolution was not retrospective, and thus would not affect the tenure of office of the present President, but he supported it in order that some of the young men who were doing so much work for the section would have a reasonable chance of attaining to the honour. The resolution was passed unanimously.

In the absence of Mr. F. C. PYBUS, his paper on

An Unusual Type of Tuberculous Peritubal Cyst

was read by the senior secretary.

The patient, aged 20, in October, 1918, had had a laparotomy for (?) tuberculous peritonitis with ascites. Some ascitic fluid had been removed and the abdomen had apparently been washed out with saline and closed. Ascites recurred, with constipation. Mr. Pybus first saw the patient on the operating table, when he was asked to perform a second laparotomy. He evacuated a large amount of fluid, at first straw-coloured, and then turbid, with flakes of lymph. The viscera could not be found, and the hand entered a large cyst with a smooth wall, extending from the upper abdomen to the depths of the pelvis, where two papillomatous masses were found and eventually identified as the enlarged fimbriated ends of the Fallopian tubes. The cyst wall was separated and the ampullary end of each tube was amputated. The ovaries were conserved. The intestines were much compressed into the upper and posterior part of the abdomen, and no gross tuberculous lesion could be detected. The patient (December, 1920) is in good health. On examination sections of the cyst wall and of the papillary masses showed that each was tuberculous.

Mr. Pybus had found it difficult to determine whether the cyst was the result of a primary tuberculous peritonitis with encapsulation, involving the tubes, or of a primary tuberculosis of the Fallopian tubes, with pelvic encapsulation and gradual expansion into the abdominal cavity; a point in favour of the latter view was that the ovaries, though attached to the cyst wall, escaped involvement in its cavity.

Dr. T. WATTS EDEN read a paper by himself and Mr. LIONEL PROVIS on the

X Ray Treatment of Uterine Fibroids and Chronic Metritis,

based upon a record of 76 cases, which appears in full in the front part of the present issue of THE LANCET.

The PRESIDENT thanked the authors for a valuable paper, and said he had received messages from Dr. R. Knox and Dr. Ironside Bruce regretting their inability to be present.

Dr. N. S. FINZI also thanked the authors. He said that the principle of X ray therapy was that the same dose has a different effect on ovaries and on fibroids from that which it has on the surrounding tissue. The difficulties, however, of treating a structure 3 to 4 inches from the surface was that the same dose could not be given to the skin and the ovaries from the same port of entry, as the rays fall inversely as the square of the distance from their source, and because the intervening tissues absorb a proportion of the rays. There were two methods of meeting this difficulty: one was the Freiburg method, which consisted in the use of a large number of ports of entry, with the tube close to the skin. The rays were directed towards the ovary on each side, and the radiation was supposed to overlap thereon. The other method, which Dr. Finzi preferred, removed the tubes farther from the skin, thus diminishing the difference between the dose given to the ovaries and that given to the skin. The total exposure-time by the second method could be brought down to 15 min. per series of treatments, whereas the Freiburg method took three to four hours. He used only three ports of entry in thin and four in stout patients. He understood that the Freiburg technique had been given up by its originators in favour of this latter method. Dr. Finzi disagreed with Dr. Eden as to the timing of the treatment; he preferred the week preceding the period, when the parts were more vascular and sensitive. There were not an undue proportion of cases in his experience in whom the first period after treatment was excessive. As to dosage, it was impossible accurately to measure the amount given to the ovaries. In Germany they had tried to estimate it by substituting for human tissues an equivalent thickness of water; but this did not work out right through bony structures, nor was it quite accurate, though approximately so, even through skin and muscle. As to the relative value of radium and X rays, as a rule Dr. Finzi used the latter, but in some cases radium was more useful and it could be used for all. The action of radium was more rapid; it was rare to get an excessive first period after its use, and it was thus especially useful in cases complicated by severe anæmia where X rays were contra-indicated, and where operation, even accompanied by transfusion, was not free from danger. As to number of applications, radium often need only be used once, and seldom more than twice. The action of radium was more localised and tissues round the uterus received but little radiation. As to the disadvantages of X ray treatment, pigmentation and depilation did not matter much, but some late and serious after-results—caused by infection of damaged skin—had been reported from abroad. However, these were unlikely except after the prolonged treatment necessary for carcinoma. The internal after-results in certain patients who were operated on after X ray treatment were found to be the formation of an

abnormal number of adhesions and of a hard and dense substance resembling cartilage round the ovaries; X ray treatment thus in many, though not in all, cases increased the difficulty of subsequent operation. Among contra-indications were the age of the patient; sometimes untoward results occurred in the very young, and the nearer the menopause the better the result. As a rule, cases under 38 were excluded; Dr. Finzi's cases were usually over 40. A degenerating fibroid or an inflammatory condition in structures round the ovary were also contra-indications. A dormant pyosalpinx might be lighted up; possibly this is what had taken place in the case described by Dr. Eden. Dr. Finzi had used the treatment in malignant cases, with much bigger doses and longer exposures. As to size, he had treated fibroids coming up to the ensiform cartilage, and had got considerable diminution, progressive for months and years. After the first six months the growth was just above the umbilicus, and at the end of the second six months below the umbilicus. Cases of post-menopausal treatment had been reported from abroad, in which fibroids had shrunk in size. This showed that there was a direct action on fibroids as well as action on the ovaries. Pregnancy was a contra-indication to X ray therapy. Dr. Finzi had treated over 100 selected cases during the last 11 years, of which only one had been a complete failure and one a partial failure. The advantage over operation was that the patient need not lie up. When the treatment ended the patient was well, and there was no prolonged convalescence. Radiation sickness could be avoided if each treatment was spread over three or four days, and repeated three to six times at four-weekly intervals.

Dr. G. BLACKER was interested in the paper by Dr. Eden and Mr. Provis, inasmuch as he himself had abandoned the use of X rays years ago. In a few cases he used radium, but he advocated complete removal of fibroids larger than a four months pregnancy, as well as those complicated by degeneration, pressure symptoms, pelvic inflammation, or pain. Radium, in Dr. Blacker's opinion, combined all the advantages and had none of the disadvantages of X rays. The intra-uterine application of radium eliminated the risk of burns and late sequelæ such as telangiectases, which might occur many years after treatment by X rays. Moreover, it entailed a preliminary exploration of the uterus, a valuable safeguard against missing a malignant case. Dr. Blacker had treated 40 cases in all with radium—about 12 for small fibroids and the rest for hæmorrhage at the menopause, using 100 mg. for 24 hours. He had also used radium in patients as young as 29 to cure menorrhagia, when curetting had failed. With a dose of 2000 mg. hours he obtained 9 months' amenorrhœa, during which time anæmia could be treated and another dose of radium given later if found necessary. The results published in America were on a much larger scale than in this country. Leda J. Stacy of the Mayo clinic had reported 600 cases and H. A. Kelly 180 cases of fibroid tumour, of which 171 had been cured. Nine had had to be operated on and no dense adhesions were found. Dr. Blacker then described the technique used by him. After dilatation and curettage he inserted a tube of 100 to 120 mg., protected by a screen of 2 mm. of lead and 3 mm. of silver, into the uterus. The treatment took 24 hours only and the patient was laid up for only two or three days. He disagreed with Dr. Finzi in so far that he found the first period tended to be excessive and therefore he chose a time midway between periods for treatment. There was no danger at the time, but if a too large dose were given late sequelæ might supervene. A purulent discharge started in one case some months after treatment and a septic arthritis ensued. The radium acted directly on the uterus, causing an obliterative endarteritis; the artificial menopause was thus produced by direct action on uterine tissue. Of Stacy's cases some were quite young, and the dosage in these cases was reduced to 30 or 60 mg., or the time of exposure lessened. It had been said that a monster was likely to result if X rays were used during pregnancy, but of the six cases of pregnancy in Stacy's collection three had had healthy children. Radium therapy was short, certain, and efficient; certainly it was expensive, but so, Dr. Blacker understood from patients, was treatment by X rays.

Dr. LOUISA MARTINDALE advocated intensive X ray therapy in a large percentage of cases of fibromyomata of the uterus. Since January, 1914, when she had first started X ray treatment, she had had 136 cases of fibroid uterus under her care. Of these, she had treated 56 by hysterectomy, 5 by myomectomy, and 43 by X ray therapy. In 5 cases hysterectomy was performed after X ray treatment. In 41 per cent. of cases, therefore, of uterine fibroids requiring treatment she had definitely chosen radio-therapy, and since probably 9 of the hysterectomy cases could equally well have been treated by X rays, the percentage of cases suitable for radiotherapy was really nearer 50 per cent. The technique adopted was that studied by Dr. Martindale in 1912 and 1913 in the gynæcological clinic of the Freiburg University under Krönig and Gauss, with slight modifications due chiefly to the use of a Coolidge tube since 1919. She had already published the details of the technique, which, briefly, consisted in the use of much cross fire through 18–22 ports of entry, carefully marked out on the patient's abdomen and sacrum. The tube was tilted so that the central ray through each square area reached the ovaries. Dr. Martindale gave one series of two treatments, irrespective of periods, on two consecutive days once in three weeks; she worked with a very hard tube, at least 9 inches, with 4–5 milliamps, and used a filter of 3 mm. of aluminium. The protection of the patient was extremely thorough, and the dosage was measured by Kienboeck's strips, which the nurse in charge developed at a specified temperature, in a standard developer, for a specified time. Dr. Martindale said she thus had accurate and permanent records of the dosage employed for each patient. She had never seen any bad effects, never a burn, and only twice any pigmentation. In 5 cases there was some "Röntgenjammer." She considered the ideal cases for X ray treatment those in which the patient's age is between 40 and 50, the tumour not bigger than a six months pregnancy, and the fibroid interstitial, the chief symptom being menorrhagia. In such cases from four to six treatments would effect a cure—that is, a lasting amenorrhœa, an improvement in the general condition, a shrinkage of the tumour to at least half its original size, and a climacteric free from uncomfortable symptoms. Cases complicated by grave heart or lung disease, exophthalmic goitre, asthma, or any other serious disease did well with X ray therapy, and in such cases Dr. Martindale had used this treatment even when the tumours reached far above the umbilicus. She chose operative treatment: (1) for submucous, subperitoneal, or pedunculated fibroids; (2) for cases of carcinoma of the body (sometimes a diagnostic curetting was done before treatment was decided on); (3) in all cases of doubtful diagnosis. In 4 cases a fresh series of X ray treatments had to be given after an interval of some months; in 1 case, after ten months' amenorrhœa, there was one period; in another after seven months. In another there was slight metrorrhagia, which subsequently cleared up. In the 5 cases in which a hysterectomy followed X ray treatment sections were made of the uterus and ovaries. In 1 case (9 treatments, 2261 X, Kienboeck) the pathologist reported:—

> Section shows a very cellular fibroid, there is no sign of inflammatory change, and degenerative changes are also absent.

In another (7 treatments, 2390 X):—

> The large fibroid has been cut and shows the usual muscle bundles in a fibrous stroma. There is no obvious increase in the amount of fibrous tissue or other degenerative change. The ovary also shows all the normal structures, including a recent corpus luteum, so that in this case the X rays have not apparently destroyed the ovarian function. No evidence of any malignant growth.

In another case 4 treatments (1250 X in all) cured the menorrhagia, but the year after the patient devoloped gastro-intestinal trouble and became emaciated, with ascites and symptoms of chronic intestinal obstruction. The uterus was very hard and immovable. A total hysterectomy was performed. No adhesions were found; the fibroid had undergone calcification in some areas, and the intestines were covered by small

white spots. The patient died ten days after, and the post-mortem showed—

Dense matting of all intestines and masses of malignant growth of omentum, stomach, and mesentery; there were numerous hard lumps like sago grains. Sections showed a malignant growth, probably endotheliomatous in origin, and apparently primary in omentum.

Dr. Martindale described one other case in which hysterectomy had been successfully performed after menorrhagia had been relieved, but pressure symptoms remained troublesome. In all the cases of her series, except those mentioned, Dr. Martindale said that the patients had done extremely well. She felt that though the improvement in health was doubtless primarily due to the cure of the anæmia, there was some other factor at work. She had recently corresponded with or seen all her cases except two, and their reports as to their energy and well-being had suggested strongly that a woman who has undergone X ray treatment ages less quickly than one who has suffered a hysterectomy.

Dr. S. GILBERT SCOTT said that larger openings would, in his opinion, have given even fewer failures than those described by Dr. Eden, because ovaries were sometimes tucked away and impossible to locate. Krönig himself had given up the technique of many openings. There was no reason to treat fibroids as different from any other deep abdominal tumour, and no need to use enormous doses. It was now some 18 years since the first attempts were made to apply X rays as a means of inducing an artificial menopause and of relieving symptoms where fibrous and myomatous tumours of the uterus were present. Dr. Scott well remembered how sceptical English radiologists were when this method of treatment was first advocated by continental workers, but practical experience soon proved what a valuable therapeutic agent was at hand. Remarkable results had been achieved, even in those days when apparatus and technique were undeveloped. Gynæcologists had been as sceptical as radiologists and, owing either to conservatism or prejudice, little headway had been made in this country until recently. Dr. Scott congratulated the section on having taken the matter up seriously; the conjoint discussion of radiologists and gynæcologists at Cambridge last year showed the keen interest now being taken in the subject. Dr. Scott was disappointed that Dr. Eden and Mr. Provis did not record 700 instead of 70 odd cases, as it was only from large numbers that any definite rules could be laid down as to which cases are suitable and which unsuitable for X ray treatment. If the results were to be satisfactory, the gynæcologist or radiologist must have absolute control over his technique, dosage, &c. Slipshod methods were not permissible. Moreover, the gynæcologist's opinion was essential before the radiologist could give his as to the suitability of a case. The ideal method was for both specialists to see the patient together in consultation, as was the custom of Dr. Williamson and Dr. Finzi at St. Bartholomew's Hospital. Dr. Scott wished to emphasise the extraordinary control to be obtained over the common menstrual disturbances, such as dysmenorrhœa. The age of the patient did not matter, as there was no risk whatever of sterilisation provided the radiologist had full control over dosage and technique. It was easy to coax the periods back to normal in most cases without the necessity of stopping even one, and it was a mistake to think that to obtain results in these cases, sterilisation, whether temporary or permanent, was necessary. The technique was somewhat different from that used in fibroids—less intensive, as the ovaries were very sensitive. One puzzling point was the occasional early relief of bladder pressure symptoms, at a time when fibroids had not shrunk to any appreciable extent. Dr. Scott agreed with Dr. Martindale that adhesions were not serious in uncomplicated cases; they might result from the disease that was being treated.

Dr. HERBERT WILLIAMSON said he was a firm believer in treatment by X rays and radio-active substances for malignant disease as well as for fibroids. At present such treatment was largely empirical and not scientific, mainly owing to the difficulty of measuring dosage and of estimating how much radiation was lost before reaching the organ or tumour. These difficulties would be overcome in time. He thought it would have been more helpful if the dosage in Dr. Eden's paper had been measured in either H or X units instead of by time of exposure only. With Dr. Finzi, Dr. Williamson had treated 15 cases in the last year and a half, including fibroids, chronic metritis, and so forth. All cases had been curetted and microscoped first; this was of great importance. All but two cases were highly successful, and no untoward results had occurred. On the other hand, it must be remembered how satisfactory were the operative results in the treatment of fibroids, and the ovaries were thus preserved. Dr. Williamson excluded from X ray therapy cases under 40 or those in whom the tumour was very large, or degenerating, or could be enucleated; also where a condition of inflammation or malignancy, pressure symptoms, an ovarian tumour, or pregnancy existed. Grave anæmia was also a contra-indication, but transfusion made all the difference to these cases. In three of his patients, young women under 35, severe chlorosis had followed X ray treatment. Dr. Williamson could not agree that the operation was as easy after as before this treatment. In three cases he had found troublesome adhesions and a cartilaginous condition of the tissues. In two cases of fibroids (red degeneration) these were found on operation in an almost sloughing condition, and the patients were very toxæmic. In another case of chronic metritis treated by X rays with apparent success, six months after treatment a discharge of pus containing *B. coli* began. In three weeks it became blood-stained. Microscopical examination of results of a diagnostic curettage were doubtful, but on hysterectomy a carcinoma of the body was found. As to Dr. Blacker's remarks on the use of radium in young women, Dr. Williamson had tried 25 mmg., filtered with a platinum screen, with the usual exposure and also 1 mmg. for 24 hours, but had had no result, and he therefore thought this treatment could not yet be relied on.

Dr. CUTHBERT LOCKYER thanked Dr. Eden and Mr. Provis for the help their paper would give to other workers in this field. Their experience had proved the value of X rays. He asked what percentage of the total number of fibroids the authors considered suitable for X rays. Dr. Martindale had suggested 39 per cent. at Cambridge, and her optimism had now increased to 50 per cent. Why did the authors not express their dosage in X units? Dr. Lockyer suggested as possible explanations of Dr. Eden's unfortunate case: (1) An ascending infection; (2) ulceration following an injury to the bowel caused by X rays; (3) an unrecognised condition of pelvic inflammation existing from the first.

Mr. T. G. STEVENS described the case of a patient who had had X ray treatment for uterine hæmorrhage due to fibroids. Complete amenorrhœa had resulted, but on operation four years after a large sarcoma was found extending from the external portion of the side of the cervix. He brought forward the case, not from any conviction that the sarcoma resulted from the treatment, but merely to point out that the method was still at the experimental stage and that it was still questionable what late sequelæ might occur.

Dr. AGNES SAVILL said that she now had the abdomen divided into six areas, and each part got one dose. Another excellent method of treatment which should not be forgotten was ionisation of the uterus. Dr. Savill quoted cases in which this method had been very successful.

Reply to the Discussion.

Dr. EDEN, in reply, was glad to find unanimity among all of the speakers, with the exception of Dr. Finzi, as to the class of tumour suitable for this treatment. He agreed with Mr. Stevens as to possible remote after-effects. In reply to Dr. Blacker, Dr. Eden said he had seen no evidence of late skin changes. He had seldom seen Dr. Blacker so enthusiastic as he appeared to be over radium treatment. The difference was that radium treatment was really operative, involving a curettage and an anæsthetic, and sometimes even a repetition of the latter. With X ray therapy the patient avoided operation, and it was often used *because* operation had been refused. Dr. Eden did

not agree with Dr. Williamson and Dr. Blacker about the value of a diagnostic curettage. The uterine cavity was often distorted when fibroids were present and could not be satisfactorily curetted. Careful observation of symptoms would be more use in the recognition of malignancy. Dr. Eden had found no clinical evidence of adhesions at operations after treatment. If Dr. Scott could coax periods in young women back to normal Dr. Eden trusted he would give mankind the benefit of his experience without delay.

Mr. PROVIS said that the omission to state dosage in terms of units was deliberate. What proof was there that the ovary actually received any particular dose? In the use of Kienboeck's strips as indicator the solution must always be of accurate temperature, and this was difficult to achieve. It was much safer therefore to speak of length of exposure. It was imperative that the technical side of the treatment should be thoroughly mastered. As to radium therapy probably the gamma ray from a hard tube was the same as the active agent in radium therapy. Whether the same control could be established was doubtful. Mr. Provis had seen one patient seriously knocked out after radium treatment. As to Krönig having given up the Freiburg method, this was probably true because Krönig was dead.[1] The great advantage of small openings was their safety. It was hardly right to deal with dysmenorrhœa in young women in the present state of our knowledge. No effect might be seen for some time, and suddenly amenorrhœa might be produced without warning.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

EXHIBITION OF CLINICAL CASES.

A MEETING of this section of the Royal Society of Medicine was held on Jan. 28th, Dr. F. S. LANGMEAD, the President, being in the chair.

Dr. J. PORTER PARKINSON showed a case of

Patent Ductus Arteriosus

in a girl, aged 7 years, who had been admitted to hospital for cough and spitting of a small amount of blood which apparently came from the throat.

The family history was unimportant. The child had never been strong; she had had influenza, measles, and chicken-pox, and in 1915 had spat up a little blood, which had continued for about two months; the attacks of hæmoptysis had recurred each following year, and between them she had been well. She was a child of low intelligence with a Mongolian type of face. The cranial circumference was 47 cm. There was no cyanosis or clubbing. The apex of the heart was in the fifth intercostal space, ½ inch inside the nipple line. The right border of deep dullness was ½ inch to the right of the right border of the sternum, the left border of dullness was continued upwards in the third and second intercostal spaces, gradually approaching the sternum. In the second intercostal space near the sternum could be heard a loud harsh murmur continued through systole into diastole, the murmur being heard, though less loudly, all over the cardiac area, in the vessels of the neck, and at the back of the chest, especially on the left side. The pulmonary second sound was not accentuated. The lungs and abdomen appeared normal, and there was no enlargement of the liver or spleen.

The case was regarded as typical of patency of the ductus arteriosus. Both percussion and a skiagram showed the enlargement of the heart to the right, and Gerhardt's line of dullness prolonging upwards the dullness of the heart, and due doubtless to dilatation of the pulmonary artery. The only unusual sign was accentuation of the pulmonary second sound. This he suggested might be due to patency of the inter-auricular septum.

Dr. F. PARKES WEBER said that there was present in this case the typical murmur of patent ductus arteriosus to which attention had first been drawn by Dr. G. A. Gibson, of Edinburgh. It had lately been recorded, however, that a number of cases had been shown to be of patent ductus arteriosus in which there had been no murmur of the Gibson type. A recent writer had suggested that this murmur was never found in simple ductus arteriosus, but only when the condition was complicated by inflammations and vegetations. An observer, however, had already stated that a patient had had the typical murmur apart from inflammation.—The PRESIDENT said that an interesting point was whether such a murmur was necessary in patent ductus arteriosus. He thought that there were cases of this condition in which only a loud systolic murmur was heard, but the Gibson murmur was, no doubt, more characteristic.

Sir THOMAS HORDER showed a case of

Idiopathic Dilatation of the Alimentary Canal

in a boy, aged 6½ years, who was otherwise quite healthy. The abdomen was large and the costal margin was symmetrically expanded. The enlargement was uniform, the percussion note was tympanitic, there was no enlargement of veins or ascites, and no rhythmical peristalsis. The temperature was normal, there had been no vomiting or sweating, and there was no cardiac or renal disease.

The abdomen had always been large, but two years ago it had become larger. The doctor in attendance was satisfied as to the absence of tuberculous peritonitis, and treated the condition by massage and exercises, with improvement. One month ago the abdomen had again increased in size, and the enlargement had been said to be more noticeable after any nervousness or excitement; there was then also slight pain. Weight had not diminished. The boy passed much wind per anum, but did not eructate. Skiagrams were shown, taken after an opaque meal. There was considerable dilatation of the stomach, which lay athwart the abdomen. It had not dropped, but was clearly atonic. The pyloric segment lay at the top of the right iliac fossa. There was no conspicuous delay in the passage of the opaque meal. After 4½ hours the stomach was empty, and the cæcum, which was dilated, was becoming filled. At the end of six hours the cæcum was packed. At the end of eight hours the cæcum was full, and the sigmoid fairly full and lying to the right of the mid-line. At the end of 25 hours some of the meal still remained in the cæcum and there was a good deal in the sigmoid. The transverse colon was not dilated, but seemed contracted and spastic in places. He thought that a large, dilated, and atonic stomach, a dilated cæcum and ascending colon, and a somewhat dilated sigmoid were present. There was no constipation, the bowels acting two or three times in the 24 hours.

The case did not conform to any of the described types of idiopathic dilatation.

Dr. PARKINSON said that there were no symptoms or signs except those by X rays. At that age slight dilatation of the stomach and of the cæcum was not unusual, especially if the diet were indigestible, as it was likely to be when the mother was over-careful and indulgent, as in this case. All that would probably be necessary would be to regulate the diet carefully.—Dr. G. DE BEC TURTLE thought that the case belonged to a group in which there is spasm of some part of the alimentary tract—in this case in part of the colon. With regard to treatment, he would advise massage and await events. In these mild cases the spasm was often overcome by simple measures and the patient got well.

The PRESIDENT showed a case of

Rheumatoid Arthritis

in a boy aged 6 years. When first seen at 1 year and 9 months there was considerable swelling over the dorsa of the hands and feet not limited to the wrists and ankles, a combined macular and papular rash, areas of erythema over the breast and arms, and offensive motions. He had regarded the rash and œdema as toxic in origin and connected with the offensive stools, but treatment directed to the latter proved valueless, the rash and œdema persisting, and the boy was admitted to hospital. About this time he developed fixation of the neck, which was very painful and caused cervical caries to be suspected, but this was negatived by X rays. Dr. W. S. Colman, under whose care the child was while in hospital, made the tentative diagnosis of rheumatoid arthritis, which subsequently proved to be the explanation. Later the swelling of the hands became more localised to the carpal and tarsal joints.

After discharge from hospital, he remained pale and looked ill, the joint swellings varying considerably from time to time. The only treatment which appeared to benefit him was thyroid in small doses, and under this he gradually

[1] THE LANCET, 1917, i., 841.

improved. In August, 1917, he was again admitted for fever, breathlessness, and further painful swelling of the joints and painful stiffness of the neck. Thereafter he again improved, though he did not lose the joint swellings and stiff neck. In January, 1920, after a "cold," he again became feverish, and complained of pain in the left ankle; the joints became more swollen and a purplish macular rash appeared on the knees. On admission again his temperature was normal, but pulse 156, and pallor was obvious. About the wrists and ankle-joints were symmetrical periarticular swellings reaching from the lines of these joints to the metacarpo- and metatarso-phalangeal joints. The swelling was limited to the dorsal surfaces. Glands were enlarged in the axillæ and groins. A purplish erythema affected both forearms. Besides the tachycardia a slight systolic murmur, limited to within the apex, was audible. The spleen was palpable, reaching about one inch below the ribs.

With regard to possible sources of infection, there were two carious teeth, and a nasal discharge; the urine was sterile and the stools yielded no lactose-fermenting organisms and no excess of Gram-positive organisms (Dr. D. N. Nabarro). An X-ray examination (Dr. Ironside Bruce) showed "marked general bony changes in the tarsus and carpus which showed advanced ossification as compared with the metatarsus and metacarpus; some signs of localised destruction of bone." Under observation in hospital he ran an irregular fever at intervals of two or three days, his temperature sometimes reaching 102° or 103° F. and subsiding within an hour or two. The rises of temperature were associated with no subjective signs, but a patchy pink erythematous rash appeared on the chest. A vaccine was prepared from the predominant organisms of the stools (*B. coli* and streptococci), but produced neither local nor general reaction to 25 millions of each on two occasions. Later the rash spread to the arms and thighs both on their flexor and extensor aspects, the patches of erythema varying from the size of a pea to that of a sixpence. Another dose of the vaccine (50 millions of each organism) produced again no kind of reaction and failed to affect the disease, the stiffness of the neck and the swelling of joints becoming more marked and an irregular temperature and slight tachycardia persisting. A culture from a septic tooth grew only *Micrococcus catarrhalis* and streptococcus, and a vaccine prepared from them also failed to produce a reaction. Owing to infection in the ward the boy was discharged after three months, in April, 1920. He had since been attending the out-patient department and has again improved with thyroid, the joint swellings and fixity diminishing, the spleen becoming smaller and no further rash having appeared. There was still some stiffness of the neck.

The case was shown to illustrate: (1) The early œdema, resembling toxic œdema, of rheumatoid arthritis. (2) The association of a rash with each recrudescence of joint swelling and pain. (3) The value of thyroid in certain cases of the disease.

Dr. R. LLEWELLYN JONES said that he had found thyroid to be of most value in adult cases with local syncope of the fingers, such as made it difficult to distinguish the condition from Raynaud's disease. His experience corroborated that of the President. He considered that the term "rheumatoid" should not be applied to these cases. He would prefer to reserve that term for atrophic cases with scleroderma. This was undoubtedly a case of Still's disease; he would prefer to call it "infective arthritis."—Mr. H. A. T. FAIRBANK referred to a case in which an operation had been performed and the ileum joined to the colon, but no benefit had resulted. He had seen the child again, and found that the hips were markedly affected and the joints stiff. X ray examination had shown much alteration of the articular surfaces. Dr. Still said that it was not similar to those which he had described, but was an osteo-arthritis with destruction of bones.—Dr. WEBER asked the President whether he had seen these cases associated with psoriasis, for the two were often associated in adults.—The PRESIDENT, in reply, said that he had not recognised the association with psoriasis in childhood. He agreed as to the diagnosis of Still's disease, and, indeed, used the term "rheumatoid arthritis in children" as synonymous with Still's disease.

The PRESIDENT also showed a

Case of Obesity.

The patient was a boy, aged 11½ years, who was admitted to hospital in February, 1920, for "excessive fatness" which had been gradually increasing for one year. He was the eldest of four children, the two youngest of whom had died, one of broncho-pneumonia, the other of diarrhœa and vomiting. His only illnesses had been a severe attack of "diarrhœa and vomiting" when aged 1 year, after which he was greatly wasted, and poliomyelitis, which was not detected until he started to walk at 1 year and 5 months. The atrophy and weakness of muscles was confined to the right leg.

At the age of 9 the boy was a thin weakly child, pale and ill-nourished; at 9½ he appeared well-nourished, at 10 he weighed 5 st. 8 lb. and four months later 6 st. 12 lb. The excess of fat appeared first on the trunk. He suffered every three or four days with nausea and severe frontal headache. When he came under observation his appearance was that of a boy of 13 or 14, rather than of 10½. There was general excess of fat, more marked on the trunk, where it was thrown into folds. The breasts showed gynæcomastia. The genitals were normally infantile. Teeth were normal. No precocious development of hair. Supraclavicular fat not disproportionately excessive. Intelligence good and no abnormal nervous signs (except those of poliomyelitis). The urine was not increased and contained no sugar. He was given 120 g. of sugar after the bladder had been emptied, and three hours later passed urine containing 0·2 per cent. of glucose. An X ray examination of the skull was negative.

Treatment by pituitary extract was given, 8 minims of pituitrin (i.e., a 20 per cent. extract of the posterior lobe) being combined with an extract of anterior lobe of an ox's pituitary (each dose containing 5 gr. of the dried lobe). This was injected into the buttock. At first four doses were given in five days and led to a decrease in weight by 2 lb. 5 oz. When this was followed by weekly doses the weight steadily increased again, and when discharged, after one month, he weighed 12 oz. more than on admission. The initial loss of weight was regarded as probably due to the distress, sleeplessness, and loss of appetite caused by the frequent injections. When next seen in out-patient department in March, 1920, he weighed 7 st. Thyroid (2 gr. daily) was given, and on Sept. 11th the weight, after slight fluctuations, was still 7 st. A slight illness then caused it to drop to 6 st. 10½ lb.; the thyroid was discontinued, and a fortnight later he had gained 2½ lb. Thyroid (3 gr. daily) led at first to a decrease of weight, but after a month it again increased. He was now taking 4 gr. daily. His last weight was 6 st. 9½ lb., which was less by 2½ lb. than in January, 1920. He was more usual in appearance and had grown considerably. There was no evidence of gonadic disability.

The case was regarded as possibly one of subnormal activity of the thyroid gland, and the question was raised as to whether the obesity often met with after recovery from severe inanition in children was so explained. He thought that these cases were often called dyspituitarism on insufficient evidence.

Dr. E. A. COCKAYNE said that cases of this kind which he had seen during the past year or two had shown no evidence of hypopituitarism, and those examined had shown no abnormal sugar tolerance, and the X ray examination had been negative. He doubted if the slight loss of weight after thyroid was an evidence of thyroid deficiency.

Dr. L. W. BATTEN showed for Dr. H. MORLEY FLETCHER a case of

Scleroderma with Sclerodactylia in a Child with Infantilism.

There had also been some joint changes leading to fixation. The muscles were hard and suggested myositis fibrosa, which with the scleroderma contributed to the limitation of movement at the joints. An especial feature was the presence of nodules, situated both over bony prominences and in loose tissues, as in the subcutaneous tissue of the abdominal wall. Some of these were freely movable, others attached to deeper structures. X rays and examination after removal failed to show any calcareous change in them, and microscopically they consisted of fibrous tissue.

Dr. WEBER considered the case to be one of the sclerodactylia form of scleroderma, associated with some remarkable features: (1) the fibrotic changes were not confined to the skin, but had led to stiffness of some of the small joints and possibly also affected muscles, producing a mild condition of myositis fibrosa; (2) infantilism; and (3) the presence of subcutaneous nodules. He felt sure that the nodules, from their appearance and distribution, were of the type of rheumatic nodules not associated with a cardiac lesion. He asked whether the child had been subjected to cold

or neglect, for it was possible in sclerodactylia, when affecting young children, that neglect (especially with regard to feeding) and exposure to cold had an effect.—The PRESIDENT said that there was a group of cases, as described by Dr. J. A. Nixon, in which, as well as scleroderma and sclerodactylia, there might be similar changes in muscles, joints, and even in the pleura and pericardium. The present case reminded him of one which he had shown in which there was also myositis fibrosa and scleroderma, sclerodactylia, and fixation of joints, which were well marked within a few weeks of birth, and were probably congenital in origin. An unusual feature in the case now shown was the nodules, which, though resembling those of rheumatism to some extent, he thought were not rheumatic, and were different both in shape and distribution. The nodules reminded him more of calcinosis, which might also be associated with a condition of skin resembling scleroderma, but that was not apparently the explanation in this case. He felt that there was some connecting link between these various conditions.—Mr. B. WHITCHURCH HOWELL spoke of the necessity, from the point of view of practical treatment, of coaxing the joints into the optimum position of utility.

Dr. W. J. PEARSON showed

A Case for Diagnosis.

The patient, a child aged 5 years and 11 months, first attended hospital a year ago for wasting of six months' duration. There had been slight puffiness of the eyes with loss of appetite for two months. A cough was associated with some expectoration; there was no fever. A trace of albumin had been found in the urine on one occasion. The liver reached two and a half finger-breadths below the costal margin; the spleen was not enlarged. The child was undersized for its age, but was bright and intelligent. The middle portion of the trunk resembled that of a developed woman, but the shoulders were comparatively infantile. There was considerable increase of subcutaneous tissue all over the thorax and thighs, but especially noticeable over the abdominal wall. The abdomen was distended. The Wassermann reaction was negative and X ray examination showed no epiphyseal changes.

Dr. WEBER suggested the possibility of suprarenal tumour with which obesity of this form was sometimes associated. In such cases, however, there was usually sexual precocity and hypertrichosis.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

A MEETING of this society was held at 11, Chandos-street, London, W., on Jan. 21st, with Professor W. J. R. SIMPSON, the President, in the chair.

A paper was read by Lieutenant-Colonel C. A. GILL, I.M.S., entitled

The Influence of Humidity on the Life-History of Mosquitoes and on their Power to Transmit Infection.

Hippocrates and many early classical writers had observed the association of malaria with the humid atmospheres prevailing around swamps and marshes. In modern times the importance of humidity was referred to in treatises on malaria, but without regard to its precise significance. Relative humidity—i.e., the amount of moisture in the air expressed as a percentage of that required to cause saturation—he pointed out, was subject to marked variations with change of temperature, the two factors bearing an inverse ratio to each other, and their close interdependence necessitated both being taken into account in determining the influence of either on malaria.

Colonel Gill proceeded to describe experiments which had been conducted with *Culex fatigans* and bird malaria (*Proteosoma grassi*) with reference to the effect of varying degrees of humidity on the length of life of the culex and on its power to transmit bird malaria.

The mosquitoes were placed in a series of incubators at 27° C., and their duration of life was determined under different degrees of relative humidity; in other respects the conditions to which the various batches of insects were exposed were identical after feeding them the previous night on an infected sparrow. Each morning the dead mosquitoes were removed and counted, and dissections were carried out to ascertain the number of oöcysts which had developed in the midgut. Records of humidity and temperature were carefully kept through readings of the wet and dry bulb and maximum and minimum thermometers. Variations in humidity were secured by placing small wet sponges in the incubators and by means of calcium chloride and dilutions of sulphuric acid. Special care was taken to maintain the incubators and constant temperature.

The results of his experiments were briefly summarised, and showed that *Culex fatigans* was invariably killed within five days with a relative humidity of 45 per cent. or less, but death rarely occurred within ten days with a humidity between 65 and 75 per cent., whilst 80 per cent. humidity was even more favourable to life. As with the effect on the culex, so with the development of *Proteosoma grassi*, the influence of these conditions of temperature and humidity proved constant in the regularity of appearance and maturity of the oöcysts found in the midgut of the culex, irrespective of the degree of relative humidity, save that with low humidity (45 per cent. or less) the desiccation of the mosquitoes prevented any further examination. There was, however, apparently a close relationship between the number of oöcysts in the midgut of the mosquito and the number of parasites in the blood of the sparrow, provided the count of the latter was made on the day of feeding. From the results of these experiments he had concluded that a mean relative humidity of not less than 48 per cent. at a temperature of 27° C. was essential to the existence of *Culex fatigans* for a period of five days, and that a lower degree of humidity prevented the transmission of bird malaria owing to the death of the insect host; also that the degree of infection or rate of development of the sexual parasite in the mosquito was not directly influenced by relative humidity. Examples based on observations in Lahore were quoted as to the influence of humidity on the length of life of the culex and the effect of atmospheric changes on the habits of mosquitoes during the course of the day under natural conditions, the preference for the more humid shelter within the house in the heat of the day, and the avoidance of it when night fell. Under both experimental and natural conditions feeding habits of mosquitoes appeared to be governed alike by the degree of relative humidity, for failure to feed occurred in experiments with a daily mean humidity under 40 per cent., whilst successful feeds were obtained when the relative humidity was over 50 per cent. Such influence would seem to account for the disappearance of the mosquito in the Punjab during the intense dry heat of June and for its return and commencing to feed after the first monsoon. During hibernation, when exposed to low mean temperature and high mean relative humidity, insects were known to live for several months. Although his observations had been confined to *Culex fatigans*, he considered it justifiable to assume that his conclusions were applicable in principle to all mosquitoes and to the significance of their habits of selecting special types of shelter favourable to their survival.

The Rôle of Temperature.

Low temperature combined with high degrees of relative humidity was regarded as not unfavourable to the existence of the culex, although at 10° C. the insect became sluggish and showed no desire to feed. At 26° C., however, and with high but *not* with low degrees of humidity, there was marked activity, readiness to feed, and rapid development of eggs, whereas at 40° C. *Culex fatigans* died quickly in contrast to some Indian anophelines. Recent observations made at the London School of Tropical Medicine, and also by Roubaud, led to the conclusion that temperature exerted a direct effect on the malarial parasite in the mosquito; low temperature inhibited the growth of the oöcyst, and within certain limits its rate of development was dependent on the mean temperature. In the case of *Culex fatigans* length of life was compatible with a wide range of temperature, but vitality was reduced at low temperature. He consequently regarded the mechanism of malarial infection as being in no small degree influenced by and dependent on the com-

bination of the factors of temperature and humidity, and he emphasised the importance of ascertaining the optimum conditions of these factors and the range between the limits favourable to the transmission of infection. Such information would serve to elucidate certain points bearing on the endemiology and epidemiology of malaria. As examples, he mentioned that though the distribution of anophelines in the United Kingdom was widespread, indigenous malaria was much restricted, and he subsequently showed that this was due to its confinement to areas where favourable conditions of temperature and humidity prevailed. Similarly, he explained *paludism sine malaria*, the concurrence of anophelines and human carriers with the absence of fresh infections. He also regarded *malaria sine paludism* or the occurrence of new infections in localities where there were few anophelines and human carriers, provided there was a period of potential infection, as attributable to favourable influences of the two factors concerned. He claimed that the rôle of meteorology was a subject of considerable importance, and that the practical bearing of the information it afforded was the possibility, so long as the required meteorological data were available, of determining the season of the year and duration of the period during which malaria could normally be acquired in any particular area. It seemed probable, indeed, that with the knowledge provided by the meteorological conditions in the United Kingdom less importance could be assigned to anti-mosquito measures in the particular areas where conditions were known to be unfavourable to the transmission of malarial infection.

Discussion.

Dr. A. G. MACDONALD was of opinion that warmth and humidity should not be dissociated in a consideration of the subject of the incidence of malaria; temperature had a universal influence, humidity a local influence. He referred to the states of atmospheric temperature and humidity in Mesopotamia and Singapore. In the former region hospital admissions for malaria did not fluctuate during the months of low humidity, but variations in the admission-rate occurred in winter when temperature was lower. There was a reduction of infection in June and July, months of low humidity. Colonel Gill's observations had shown the effects of low humidity and influence of temperature on the development of the parasite. These factors had also an important bearing on the question of preventive measures. The minimum and maximum of conditions favourable for the development of the plasmodium in the mosquito were points requiring investigation; there was also the necessity of ascertaining facts bearing on the distribution and proportion of malarial cases in relation to the factors under discussion.

Dr. B. BLACKLOCK regarded Colonel Gill's conclusions as being in advance of the results obtained in his experimental work. Colonel Gill had proved that when the relative humidity was reduced below 45 per cent. the culex died, and that, with the survival of culex, development of *Proteosoma grassii* proceeded in a regular manner. What bearing had these results on the anopheles and malaria? As 14 of the culices had died and 16 had survived in the course of the experiments, he thought it probable that other factors than humidity would have to be taken into account in connexion with the survival of anopheles and the cycle of development of the parasite. Preventive measures could not yet be guided by Colonel Gill's observations. He criticised the acceptance of some of the mean readings given of relative humidity as inconsistent.

Dr. P. H. MANSON-BAHR stated that the death of the 14 culices could be attributed to the unfortunate accident of starvation and thirst in these particular experiments, and not to the effects of humidity and temperature. He considered that many minor factors besides humidity and temperature had effect on the development of the oöcyst in the mosquito.

Dr. C. M. WENYON described the difficulties of keeping culices alive; if they were kept too moist they died of enteritis, if too dry they died from desiccation. He referred to the dryness of Baghdad and the activity of mosquitoes during the hot months, attributing their survival under natural conditions to their habit of congregating on the water-jars during the heat of the day for the purpose of obtaining necessary moisture.

Mr. A. BACOT attributed the death of the mosquitoes in the experiments to heat-stroke, and regarded the circulation of air in the incubators as an important factor in keeping the insects alive. He inquired as to what they were fed on during the seven days' period, and referred to the favourable influence on mosquito life of isothermic conditions in certain localities, such as the Essex mud flats, and in explanation of their selection of similar haunts.

Sir RONALD ROSS quoted from past observers as to the influence of humidity and temperature, and gave his own experiences of the effect of high temperature on mosquitoes kept for experimental purposes. There were many variable influences to be reckoned with as producing variations in malaria, and it was not a question merely of humidity and temperature.

Reply.

Colonel GILL, replying, stated that the mosquitoes were fed on raisins, sometimes watered once a day by means of a small moist sponge on the bottle cover when the humidity conditions became low. He quite realised that in his experiments he was only partially dealing with two variables influencing malaria. He did not consider the monthly mean humidity of 63 per cent. for the 8 A.M. reading to be inconsistent; the 50·8 per cent. mean of 24-hourly humidity corresponded with a considerably higher 8 A.M. humidity. *Paludism sine malaria* existed if the temperature was not high enough, as no infection could be obtained. The influence of temperature and humidity on the spread of malarial infection varied according to the particular zone concerned; in England temperature was the prevailing factor, but in the tropics humidity was more concerned, and the importance of local conditions was paramount in determining a high or low humidity.

Colonel Gill exhibited charts showing the variations of relative humidity and atmosphere temperature at corresponding times during the 24 hours and the different months of the year. He also showed under the microscope specimens of the mid-gut of *A. maculipennis* which had been fed on a case of benign tertian malaria and incubated at 22° C. and at a relative humidity of 50·5 per cent. for: (1) Six days, showing development of small oöcysts containing pigment; (2) seven days, showing an increase in size of the oöcysts, but less pigment; (3) nine days, with many oöcysts of the same size as (2), but, in addition, the presence of sporozoites.

Demonstrations.

The following demonstrations were given:—

1. Rickettsia in the Bed Bug, by Mr. BACOT. The passage of *R. lectularia* from generation to generation was described as having been traced through the egg of the bed bug without the intervention of an intermediary host. The bodies appeared as minute coccoid, small-rod, and thread forms, and occurring in true diplo-coccoid form within the cytoplasm of the cell, but not in the nucleus. All the bed bugs examined had been found to be infected, and there had been very few failures in making the smears. Cimex of pigeons and bats were wanted for investigation, to see if they showed Rickettsia bodies, as *Cimex lectularia* did in sheep. Mr. Bacot exhibited specimens of *R. lectularia* of the bed bug in sections of the gut and Malpighian tubules, the cells of which were greatly enlarged, due to masses of the minute coccoid and thread forms; also in smears of the gut, ovary, the organ of Berlese, and the egg of the bed bug.

2. Sigmoidoscopic Diagnosis of Amœbic and Bacillary Dysentery, by Dr. MANSON-BAHR and Dr. A. L. GREGG. By means of the epidiascope coloured drawings were shown on the screen of the appearances, as seen through the sigmoidoscope, of the inflamed and ulcerated mucous membrane of the bowel in amœbic and bacillary dysentery, and of the subsequent polypoid and fibrotic

changes. The demonstration also included drawings of dysenteric ulceration in section, and of the material obtained through the sigmoidoscope from an ulcer showing numbers of *E. histolytica*. The sigmoidoscope was passed round for inspection and the method employed for collecting material from the surface of the bowel was explained. The figures quoted by Dr. Manson-Bahr made clear the great value of this method for the examination of material in the establishment of a correct diagnosis of dysentery cases as compared with the usual investigation of fæces only. Out of 247 examinations made, over 60 per cent. of cases had been verified as amœbic dysentery by the use of the sigmoidoscope, whereas by routine microscopic examination of the fæces *E. histolytica* or its cysts had been found in under 40 per cent. only. Preparation of the patient was necessary by means of a dose of ol. ricini, and by the administration of tinct. opii ♏ xv. four hours before examination. The process was more painful in bacillary dysentery and the amount of pain caused required to be taken note of. It was claimed that the sigmoidoscope provided a rapid and accurate means of diagnosis of dysentery, and of the recognition of unsuspected conditions such as internal hæmorrhoids, syphilitic stricture, and malignant disease of the lower bowel.

LIVERPOOL MEDICAL INSTITUTION.

AT a meeting held on Feb. 3rd, with Dr. J. E. GEMMELL, the President, in the chair, Mr. THURSTAN HOLLAND read a paper on

Some of the Rarer Conditions of Bones.

He showed radiographs of some of the accessory bones of the foot and of the sesamoid bones, and discussed their importance from the point of view of industrial injuries and compensation. He also demonstrated radiographs of six cases in which the bone of Vesalius was present in both feet, and discussed in detail the question of differentiating between the sesamoid of the peroneus, the presence of a true bone, and epiphyses at the base of the fifth metatarsal. Two cases of Köhler's disease of the scaphoid bone were demonstrated with radiographs showing the condition at the time and two years later. The paper concluded with a description of an exceedingly rare condition of the patella in which radiograph appeared to show an epiphysis on the upper and outer sides of both patellæ.

Dr. H. BALME delivered an address on Surgical Practice in China and Recent Developments in Medical Education, illustrated by lantern slides.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

THE annual meeting of this society was held at Manchester on Jan. 21st, when Mr. CARLTON OLDFIELD was elected President for the ensuing year.

Dr. H. BRIGGS showed a specimen of Tuberculous Salpingitis removed from a patient 13 years previously. She was now in perfect health. He was of opinion that inflamed tubes were more commonly tuberculous than was usually supposed.

Dr. W. W. KING showed a specimen of Hydrometra removed from a nulliparous patient. The uterus was the size of a four months' pregnancy, and the obstruction to the outlet of uterine secretions was caused by a small cyst arising in the mucosa of the cervical canal.

Dr. H. CLIFFORD showed a large Ovarian Tumour removed from a girl aged 12 years. The growth was a sarcoma of rapid growth with extensive areas of necrosis.

Dr. W. FLETCHER SHAW described a case where he had removed a large Myxomatous Tumour of the Left Ovary, the other ovary being at the time apparently quite healthy. Twelve months later the patient returned with a large abdominal tumour which, on operation, proved to be a similar growth of the right ovary.

Dr. F. H. LACEY read a paper on Induction of Labour for Contracted Pelvis based on a series of 75 cases, in which the conjugata vera measured not less than 3½ inches in flat and 3¾ inches in generally contracted pelves. The method adopted was that of Krause, but this was supplemented in 29 instances by the introduction of a de Ribes bag. The maternal mortality was, of course, nil, the morbidity 1·3 per cent. 84 per cent. of the children were born alive, and of these 78·6 per cent. were discharged well on or about the twelfth day.

Reviews and Notices of Books.

SCURVY, PAST AND PRESENT.

By ALFRED F. HESS, M.D. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 279. 18s.

Professor Hess has published so much interesting and original work on scurvy during the past seven or eight years that it seems high time to have his observations collected and published in book form. This book has now appeared under the title, "Scurvy, Past and Present," a book which is entitled to rank as one of the most important monographs of recent years. Since Lind published his great classical treatise on scurvy in 1753 no book has been written in English on this subject. The war has awakened fresh interest in food-deficiency diseases of all sorts, but Professor Hess had made scurvy his special study before the war had directed general attention to this group of diseases. His observations were undertaken in the Pediatric Clinic at New York. His experiences have been amplified and matured by the opportunities for seeing the disease on a widespread scale amongst adults which the war afforded. He does not hesitate in his conclusion that adult and infantile scurvy are one and the same disease, having an identical pathogenesis. Indeed, we may actually complain that Professor Hess is almost too considerate of unproven or even disproved theories as to the pathogenesis of scurvy. The reader grows a little tired of the discussion on McCollum's statement that scurvy is due mainly to constipation. There was ample evidence to knock the bottom out of this theory; that evidence could have been briefly stated once and the theory ignored afterwards. What really interests us is the description of the work done by Hess and his collaborators.

The prevalence of scurvy among infants in America and England has never been correctly appreciated, and a great debt of gratitude is due to Professor Hess for his splendid array of uncontrovertible facts impressing on us the impairment in infant development caused by minor deficiencies in antiscorbutic vitamine. The arraignment of patent foods for infants has never been more clearly or trenchantly set forth. The scurvy-producing effects of proprietary foods are not entirely attributable to the heating of the milk in the process of manufacture; even more important causative factors lie in the inadequate quota of milk used to make up the day's feeding and in the practice of rendering proprietary foods (with certain exceptions) alkaline in order to prevent acid fermentation of the fat. Antiscorbutic vitamine is peculiarly sensitive to the faintest alkaline reaction, and is completely destroyed by heat. But when associated with an acid it is greatly protected from the destructive effect of heat. This is well exemplified by the tomato, which is strongly anti-scorbutic even after it has been canned. As regards the effect of heat alone, it appears intensity of heat is not so destructive as prolonged heating. For this reason fresh milk rapidly dried by the Just-Hatmaker process is not deprived of its antiscorbutic properties. Not only, however, is this vitamine easily destroyed by heat, it is also peculiarly sensitive to "ageing." Ageing has least effect when the food with which the vitamine is associated has been dried. Storing in an alkaline or neutral medium causes it to deteriorate most rapidly, but even in an acid medium its potency soon diminishes. On this point Professor Hess disagrees with the report[1] of the Medical Research Council "that it may be regarded as an axiom that dry or dried foodstuffs will not prevent scurvy." He points out in discussing the relationship between infantile scurvy and rickets that there is no causal connexion between these two diseases, and that the pathological interference with the development of the bones is radically different, although the diseases so often occur together.

It is now being fairly widely recognised that scurvy is often diagnosed as rickets in young children. It is

[1] Special Report Series. No. 38.

important that this confusion should be stopped. The main criterion in diagnosing incipient or latent scurvy is the response made by an ill-nourished infant to the addition of an antiscorbutic to the diet. Professor Hess includes a most comprehensive review of the literature and of the experimental work on scurvy; some of his suggestions are unusually stimulating, as, for instance, his comment on Ingier's study of the effect of a scorbutic diet in the mother on the fœtus. "In view," he writes, "of the similarity between human and guinea-pig scurvy, we should expect not only miscarriages and still-births to result, but cases of congenital scurvy, especially of the latent or rudimentary type." He does full justice to the work of others, and may be congratulated on having made good use of his opportunity "to gather into one volume the recent advances in this field and to offer to the clinician, to the hygienist, and to the biological chemist a presentation of the existing status of this important nutritional disease."

DISEASES OF THE LUNGS AND PLEURÆ.

Including Tuberculosis and Mediastinal Growths. Sixth edition. By Sir R. DOUGLAS POWELL, Bart., K.C.V.O., M.D., F.R.C.P., and P. HORTON-SMITH HARTLEY, C.V.O., M.A., M.D., F.R.C.P., Physician with Charge of Out-patients to St. Bartholomew's Hospital. London: H. K. Lewis and Co., Ltd. 1920. With 36 plates and other illustrations. Pp. xx. + 798. 42*s*.

THIS book is, on the whole, of remarkable value. The authors have succeeded in bringing the sixth edition well up to date in most respects, and they have also avoided even critical allusion to certain modern views and teachings which show no sign of viability. There are virtues of omission as well as of commission, and the art of discarding requires even more knowledge and judgment in writing a book on tuberculosis than in playing bridge. To judge by several references to research work published only a little time ago, the authors must have put in much eleventh-hour work. It is, perhaps, a pity that in their preface they write: "..... the last word has been said on antiseptic methods in surgery .....," for such assumption of finality is a challenge liable to be stultified by subsequent events, and it is doubtful if "the last word" has yet been said on this or on any branch of science.

In their first four chapters the authors prepare the reader for the pathology to come by a clear account of the anatomy and physiology of the lungs and of the methods of physical examination they have found most helpful. The illustrations supplementing the text are well chosen; some are the more welcome for being old and trusted friends. In the chapter on hæmothorax and gunshot wounds of the chest the experience of the war has been freely drawn on and the work of British and French surgeons ably summarised. Again, in the chapter on asthma the authors show intimacy with recent advances and appreciation of their importance by devoting considerable space to the work of I. C. Walker, John Freeman, and others on anaphylaxis. In the chapter on actinomycosis the authors follow a time-honoured, almost legendary, tradition in recommending potassium iodide in large doses early in the disease. It will be interesting to see whether or not the claims made on behalf of this drug in actinomycosis will survive the storm of criticism already brewing.

In the large section dealing with tuberculosis the authors range the whole world in their lengthy discussion of various climates; but though they take the reader from Greenland's icy mountains to India's coral strand, they do not introduce him to Leonard Hill's kata-thermometer investigations, which have done so much to convert the empiricism of climatology to a rational science. It is probable that at no time so much as the present has the old controversy over the comparative importance of the "soil" and the "seed" in relation to tuberculosis been so acute, and many readers will, no doubt, first turn to the chapter on this subject to see if the authors have come down heavily on the side of the angels or not. They take the view that the consumptive who, properly trained, is willing and able to carry out instructions, is no real source of danger, and should not be shunned as a leper. They record the case of a lady who, dying of consumption at the age of 48, left 15 children. Of these 15, 7 developed phthisis long afterwards. Why did they do so? "It appears to us that the only answer lies in the doctrine of heredity, the inheritance, as it has been termed, of a 'tuberculous diathesis,' rendering the soil of certain family constitutions more suitable for the growth of the bacillus than that of others, so that, when infected with a suitable dose of the virus, such individuals succumb when their more fortunate brethren escape." The authors then proceed to justify this attitude from a biological standpoint, comparing the fastidious selectiveness of the tubercle bacillus with that of the seed of certain plants. They are, however, careful not to repudiate such a popular and comparatively modern teaching as that of "massive infection." It is curious that they have so little to say about the doctrine that pulmonary tuberculosis is in most cases the direct but distant sequel to infection in early childhood. They do, indeed, briefly refer to this doctrine, but only to pass from it to that of heredity and diathesis.

In a discussion of tuberculous meningitis the authors do not refer to the numerous authenticated records of recovery from this disease. Dealing with laryngeal tuberculosis, they reflect the growing tendency to regard it as a condition best treated by silence and general hygienic measures. The free curetting of ulcerated surfaces, as well as the direct application of lactic acid, so popular a few years ago, are referred to only to be politely damned. In the matter of laryngeal tuberculosis the poor man has in the past, *mirabile dictu*, often been better off than his rich neighbour who has had the help of a restlessly resourceful laryngologist. With regard to modern methods of diagnosis, the authors devote much space to the opsonic index, von Pirquet's reaction falling into the background.

As for treatment, this book is a useful milestone, showing the progress made in recent years. Readers will perhaps come to the conclusion that this "progress" is chiefly to be noted in the discarding and discrediting of such remedies as tuberculin which have diverted research from more promising themes. A new chapter on artificial pneumothorax marks the authors' adherence to this treatment which they recommend in a limited number of cases.

DISEASES OF CHILDREN.

Eleventh edition. By the late Sir JAMES FREDERICK GOODHART, Bart., M.D., LL.D. Aberd., F.R.C.P. Edited by GEORGE FREDERICK STILL, M.A., M.D., F.R.C.P. London: J. and A. Churchill. 1921. With 60 illustrations. Pp. 942. 32*s*.

A NEW edition of this tried and trusted volume appears under altered circumstances, for owing to Sir James Goodhart's death the responsibility and labour falls to Dr. Still alone. With a book which has been before the profession for 36 years, and which is, with justice, regarded as a standard work on the subject with which it deals, there is little room for comment or criticism. We must be content to examine the attitude which it takes towards recent advances in the knowledge of pediatrics, and to estimate to what extent it conforms to modern teaching. In regard to the latter inquiry it may be said at once that the new edition is a presentment of all that is sanest and best in English thought and practice in the study of children's diseases. We note, in passing, that no attempt is made to meet the continental conception of infant feeding and of the dyspeptic disorders of children, which has been planted out so widely in the United States, and has obtained a footing in this country. No place is found for separate descriptions of fat-dyspepsia, carbohydrate-dyspepsia, protein-dyspepsia, starch-injuries, and the other various articles of belief of this school. So often is the science of the laboratory distorted to meet the varying needs of clinical medicine, that we thank Dr. Still for his timely words on the application of caloric estimations to infant feeding. "As a guide," he says, "to the

general utility of a food its caloric yield has a very limited value. Still less is any such rule-of-thumb method reliable in dealing with the individual infant, for it ignores idiosyncrasy altogether, and, as we all know, one infant can utilise more of one constituent, another of some other, in the food."

Blood diseases are dealt with somewhat briefly; we note that splenic anæmia is taken as synonymous with pseudo-leukæmia, and that no mention is made of the adult form. Nowhere does splenectomy appear to be mentioned, though it has been strongly advocated for splenic anæmia both of the adult and pseudo-leukæmic forms and for familial acholuric jaundice, and many recoveries have attended it. The modern views that the acute leukæmia of children is essentially myeloid in character, in contradistinction to the usually accepted theory of lymphatic origin, and that the cells seen in preponderance in the blood are not lymphocytes but marrow cells, pass unnoticed. Posterior basic meningitis is still kept apart from cerebro-spinal fever; we think that most observers would now regard it as cerebro-spinal fever in infants, occurring in sporadic form. Official circulars would have us believe that rickets has definitely been placed among the group of deficiency diseases. In this regard it is interesting to find that Dr. Still does not accept the vitamine-deficiency explanation as proven, though he sees much to recommend it.

The book occupies a place almost alone in this country in the literature of children's diseases. The editor's hope "that this edition, like its predecessors, may mark a fresh advance in usefulness and interest" is amply fulfilled.

PHARMACOLOGY, TOXICOLOGY, AND MATERIA MEDICA.

1. *A Text-book of Pharmacology and Medical Treatment for Nurses.* By J. M. FORTESCUE-BRICKDALE, M.A., M.D. Oxon., M.R.C.P. Lond., Captain, R.A.M.C. (T.F.). London: Henry Frowde and Hodder and Stoughton. 1920. Pp. 392. 25*s*.
2. *Poisons: Their Effects and Detection.* Fifth edition. By ALEXANDER WYNTER BLYTH, M.R.C.S., F.I.C., F.C.S., &c., and MEREDITH WYNTER BLYTH, B.A. Cantab., B.Sc. Lond., F.I.C., F.C.S., &c. London: Charles Griffin and Co. 1920. Pp. 745. 36*s*.
3. *Scientific and Applied Pharmacognosy.* Second edition. By HENRY KRAEMER, Ph.B. (Chemistry), Ph.M. (Pharmacy), Ph.D. (Botany). New York: John Wiley and Sons; London: Chapman and Hall. 1920. Pp. 741. 38*s*.

1. AMONG recent additions to that excellent series, the Oxford Medical Publications, is "A Text-book of Pharmacology and Medical Treatment for Nurses," by Dr. J. M. Fortescue-Brickdale. The purpose of this book is to explain the principles of medical treatment to nurses, on the assumption that the more fully the ideas underlying directions given by medical men are appreciated, the more accurately and intelligently is the work done. At the same time an effort has been made to impress nurses with the difficulties surrounding practical therapeutics, which can only be met by a training and experience differing widely from their own. The author has carried out this plan with marked success, especially in the first or pharmacological section of the book. The pharmacology of all the more important drugs is dealt with in a clear and straightforward manner, simple explanations of chemical and physical theories being given where necessary. We would suggest, however, that in another edition the number of rarely used synthetic drugs might be reduced with advantage; it must be remembered that, compared with a medical student, the average nurse has but a limited amount of time and energy available for reading during her course of training. This portion of the book concludes with a good section on sera and vaccines.

In the second section the usual treatment of the common diseases—and of some not common—is described, but clinical and pathological descriptions are not given, nor is dosage dealt with except in connexion with the treatment of poisoning. We think that it would have been preferable to lay rather more stress upon general principles and less upon those details in regard to which there is divergence of opinion among physicians. On the other hand, one would have expected to find in such a text-book somewhat fuller descriptions of the technique of treatment usually entrusted to nurses; we have noticed no mention of nasal feeding, for example, and in the directions for giving hot-air baths in the treatment of nephritis there is no indication of the temperature required. Appendices contain useful information on disinfection, the treatment of cases of poisoning, and other matters. The book is lucidly written, and is provided with excellent illustrations, including a number of coloured figures of medicinal plants. A nurse by mastering the contents of this volume will certainly render herself considerably more efficient as an assistant to the physician.

2. We are pleased to note the appearance of the fifth edition of Wynter Blyth's "Poisons, their Effects and Detection," which has ranked for years as a standard work on the subject. In view of the importance of methods for identifying minute quantities of poisonous substances, the authors have laid stress in this edition on microchemical and physical aids to recognition, the latter having the advantage of not changing or wasting the material. Thus among the new sections we see one on micro-crystallography, which deals with the determination of the angles of crystals, their refractive indices, and so forth, and scattered through the book there are many applications of these principles. The organic derivatives of arsenic and antimony, and the newer potent synthetic drugs generally, have received attention, as has recent progress in connexion with the constituents of poisonous plants. Of such work, carried out since the appearance of the last edition, none rivals the brilliant exposition of the chemistry of ergot by Barger and his co-workers. Some account is given of recent investigations bearing on the variation of pharmacological action with chemical composition in certain groups of substances such as the atropine series, emetine and its derivatives, and the amines related to the active constituents of ergot; but such statements only serve to show how isolated, as yet, are the instances in which it is possible to identify any definite physiological effect with a certain chemical grouping. The number of deaths caused by each of the important poisons in England and Wales during the five years ending December, 1916, is given. Food-poisoning cases head the list, and of the remainder it is instructive to note the high place taken by certain poisons, such as hydrochloric acid (third on the list), the regulations governing the sale of which are the least stringent. Hydrochloric acid, it may be added, is not among the poisons which are obtainable only from qualified chemists; any dealer can sell it. A feature of this work is the account given of criminal and other poisoning cases. We were surprised, therefore, to see no mention of the Crippen case.

The subject-matter of the book as a whole has been brought well up to date, but the sections on ptomaines and food poisoning seem to have hardly received their share of revision. The bases formed during putrefaction are fully described and there is no indication how slight is the evidence upon which they have been regarded as causing poisoning when taken by the mouth. The Gaertner group of organisms, whose toxins are now generally held to be the cause of the majority of cases of food poisoning, deserve more than the few lines devoted to them. No reference is made to the use of poisonous gases in warfare. It is true that comparatively little has been made public on this subject at present, but the investigation of such substances and their effects must have brought to light facts of great toxicological interest. We hope that it will be found possible to add to the information already liberated, without forgetting the advice quoted by Lord Fisher shortly before his death: "Give not the things that are profitable to thee to a strange nation."

3. The first edition of Professor Kraemer's "Scientific and Applied Pharmacognosy," a book dealing systematically with all the more important crude vegetable and animal drugs, their constituents, adulterants, and so

forth, appeared in 1915, and we now welcome its successor. Although a considerable amount of new matter has been added, notably in connexion with progress in pharmaco-chemistry and drug cultivation, the volume has been rendered less bulky and more convenient to handle. Here also we find the importance of physical and micro-chemical method emphasised, these being the departments of analytical work in which the most important advances have been made of recent years—at least as far as the examination of foods and drugs is concerned. Few commodities demand such progressive methods of analytical control as these, on account of the chemical complexity of the substances to be dealt with, the frequency of their adulteration and sophistication, and the scientific methods now employed in preparation for the market. Speaking, presumably, of America, the author says that during the past 10 years something like 50 per cent. of the powdered drugs on sale were adulterated and the trade in spices was even worse; we cannot believe that conditions have been quite as bad in this country, but there is room for improvement. Lately more stringent legislative and analytical control has brought about a great change for the better. Among recent applications of physics we may mention an extended use of refractometric and polarimetric methods. The refractometer is not only useful in controlling the quality of oils and other products, but has been the means of indicating the presence of hitherto undetected constituents, as in the case of eucalyptus oil. The micro-polariscope is being more extensively used for the identification of alkaloids, and a process for the determination of morphia by the polarimeter has recently been described. X rays may be used to detect mineral impurities in such drugs as asafœtida, and the electrolytic determination of metals is continually finding fresh applications.

The author rightly lays stress upon the importance of crystallography as part of the scientific equipment of the pharmacognosist. In this country, at any rate, the acquaintance of analytical chemists with this subject is not always very close, and this remark applies to pharmacists with even greater force. Space can hardly be found for it in the curriculum of the latter under present conditions, but possibly a curtailment of the study of the many little-used drugs, to which pharmaceutical students are now required to devote their attention, might solve the problem. Professor Kraemer has met with considerable success in using the characters of the crystalline sublimates obtained by heating various drugs as aids to recognition, and in the identification of crystals he finds their behaviour on the thermostage of a microscope very useful.

The book is intended for the use of students in pharmacy, as a handbook for pharmacists, and as a reference book for food and drug analysts and pharmacologists. As far as it is possible to supply these needs within the limits of a single volume, it fulfils its purpose admirably. Although for pharmaceutical students it is somewhat overloaded with detail, as a work of reference it is excellent. Analysts will find the illustrations of microscopical details particularly useful in identifying drugs and determining the purity of powders.

ANATOMY OF THE HUMAN SKELETON.

Second edition. By J. ERNEST FRAZER, F.R.C.S. Eng., Professor of Anatomy in the University of London. London: J. and A. Churchill. 1920. Pp. 284. 36*s*.

THE author has not done himself justice in choosing a title for his book, the scope of which is far larger than it suggests. Instead of drily describing the dry bone careful'y cleaned and separated from neighbouring structures, Professor Frazer has sought to portray the bones as they are found in the human body with the various structures in relationship to them, and to explain the effects of these relationships on the structure and conformation of the bone. To this end the author gives 219 illustrations, many of them coloured, done by his own pen and brush. Naturally many details are given which are lacking from other text-books, for they can only be seen by the receptive eye of the anatomist himself. It is just this feature of the book, the appreciation of anatomy for its own sake and not as a means to an end, that is characteristic and of value. In the present edition the description of the illustrations is written beneath and not on the opposite page, as in the previous edition—an improvement, thereby saving the reader much needless turning backwards and forwards. The small errors which we noted in the earlier edition have now been rectified. We can confidently recommend this book to all students of anatomy, and more especially to those who are candidates for the higher examinations in this subject. Just as in the last generation the work of George Humphry was the chief agent in giving medical students a living interest in the bony skeleton, this book of Professor Frazer's has already been the means of transforming what is too often a permanent distaste for anatomy in the present-day student into a positive enthusiasm.

THE POCKET ANATOMY.

Eighth edition. By C. H. FAGGE, M.B., M.S. Lond., F.R.C.S. London: Baillière, Tindall, and Cox. 1920. Pp. 313. 5*s*.

IT is not necessary to enter into detail in dealing with this little book; the fact that it has reached its eighth edition and fiftieth thousand is in itself enough to show that it serves its purpose well. The old nomenclature has been reinstated throughout. It is undoubtedly the best of the books which serve for refreshing the mind of the student and recalling the academic points of his study.

OLD AT FORTY OR YOUNG AT SIXTY.

By ROBERT S. CARROLL, M.D. New York: The Macmillan Company. 1920. Pp. 148. 13*s*.

THERE have been many books written on the subject of old age, how to procure it and how to enjoy it, from the time of Cicero's "De Senectute" down to Sir Hermann Weber's "Means for the Prolongation of Life," and we doubt the need for yet another book on the subject. However, Dr. Carroll has set down in the work now before us a number of somewhat obvious aphorisms and principles of which those who have reached their fortieth year should take cognisance. Practically they may be summed up in the old lines from the De Regimine Sanitatis of Salerno—

> Si tibi deficiant medici, medici tibi fiant,
> hæc tria, mens hilaris, requies, moderata diæta.

Dr. Carroll rightly lays stress upon the necessity for work in moderation as tending towards a happy frame of mind, and of exercise, also in moderation. "Be cheerful, sleep well, and do not eat too much," sounds easy, but all books on old age and how to enjoy it seem to ignore the fact that, if not riches, at least a competence is necessary. The present unrest all over the world is in great part due, we fancy, to the ever-present spectre of a joyless old age, without the ability to work, and therefore with the accompanying conditions of want. But given even a very small income, old age should be a time of rest and of looking forward to the next life with calmness and that attitude of mind so beautifully described by our own poet Waller in his stanza which begins "The seas are quiet when the winds give o'er."

A NURSE'S HANDBOOK OF OBSTETRICS.

For Use in Training-Schools. By JOSEPH BROWN COOKE, M.D., Fellow of the New York Obstetrical Society. Ninth edition, revised and enlarged. By CAROLYN E. GRAY, R.N., Superintendent of City Hospital School of Nursing, Blackwells Island, New York City; and PHILIP F. WILLIAMS, M.D., Instructor in Obstetrics, School of Medicine, University of Pennsylvania. London and Philadelphia: J. B. Lippincott Company. 1920. Pp. 468. 12*s*. 6*d*.

LITTLE need be said in praise of a book which has proved its worth by running through nine editions since it first appeared in 1903. The present edition has been extensively revised and enlarged, and the more important advances in practical nursing incorporated.

New illustrations and some coloured plates have been added and a section on prenatal nursing. The advantages which result from this branch of nursing is demonstrated by the statistics of the Committee for the Reduction of Infant Mortality of the New York Milk Commission. These figures show that among 3000 women who had close supervision during their pregnancy there was a 69 per cent. decrease in the maternal mortality, a 28 per cent. decrease in the deaths of infants under one month, and a 22 per cent. decrease in stillbirths. The importance of such preventive treatment is evident when we remember that over 15,000 women die annually in the United States from childbirth. This book is an extremely good one, and this edition fully maintains the high standard of the previous ones.

JOURNALS.

Journal of the Royal Naval Medical Service.—In the issue for January a paper by Surgeon-Commander L. F. Cope, R.N., gives account of his experiences on special service in the Danube from May to September, 1919. It will be remembered[1] that this officer had overcome an epidemic of typhus in Belgrade in December, 1918. In this present period he had little medical work to do, but his account of the fertile Hungarian plain, of the disorganisation and poverty due to Bolshevism, locally held to be entirely engineered by Jews, and his esteem for and confidence in the future of the Hungarians are all interesting, as is also his account of his work on the Food Mission, which existed to buy food but had no currency the peasants would accept. Like others, he tells of the work achieved by individual British officers in apparently hopeless situations. His monitor was visited at Budapest by the commandant of the Bolshevik Marine Guard, himself formerly a sailor in the Austrian Navy, in which his present secretary had been a lieutenant. But this topsy-turveydom did not help military action, for the Bolshevists were inattentive and always late, so the threatened monitors got away unharmed; Captain V. H. Haggard, R.N., too, by his mere personality, rescued from them two motor-launches they had seized.—Surgeon Rear-Admiral P. W. Bassett-Smith publishes a very interesting report by Surgeon-Commander W. R. Harrison on Autogenous Pyorrhœa Vaccine made at Greenwich for individual patients of the Dover Patrol. Generally a short Gram-positive streptococcus was isolated. The dental surgeon reported that the loose teeth of each case should be removed, but under local treatment, scaling, hydrogen peroxide or other mouth wash, and vaccine, "the teeth have become firm, pus has stopped, and gums have healed and hardened. These are cases which formerly would have had their mouths stripped of teeth." This all means a great advantage to the individual, and a large saving of service to the Navy, and further credit to vaccine therapy.—Surgeon-Commander H. C. Whiteside, who will be remembered for his work on Malta fever 15 years ago, has an article on the Bacteriology of Cerebro-spinal Fever. It is noted that few cases occurred during the war in sea-going ships, 8·7 per cent. only in 1914 and 1915, 13 per cent. in 1916, 1917, 1918, which is tentatively ascribed to the higher degree of immunity of the trained man over the recruit living in new conditions, while fresh air and sunshine cure the carrier condition far better than local treatment. The carrier is thought to be hardly a danger to himself, as so few cases occurred in their isolation camps.—Surgeon-Commander H. S. Burniston (who is Fleet Medical Officer of the Atlantic Fleet, of H.M.S. *Queen Elizabeth*) and others are anxious that a standard treatment for syphilis (also for gonorrhœa) shall be promulgated by authority; in accordance with that all cases would be treated. Then the men will not be confused by the varying opinion of successive medical officers, but having only one system, the best, put before them, they will easily be guided to accept that. Instructions such as asked for appear to have been issued for the treatment of soft chancre. Ablution cabinets are in future to be constructed adjacent to sick bays, and specialists in genito-urinary and venereal diseases are being appointed to fleets, though it is discussed whether all medical officers should not be trained themselves skilfully to administer all such treatments.—We all know the old aphorism about the swing of the pendulum, and are reminded of it in reading Surgeon-Captain M. L. B. Rodd's first note. Things forgotten come back again, but come back with a difference. In the old days "strapping" was applied to ulcers, across them, to draw the edges together and accelerate healing. This method was discredited by surgeons trained in antiseptic surgery and disused. Now Surgeon-Captain Rodd, following Beck of Chicago, recommends that granulating wounds, if healing but slowly, shall have strips of zinc-oxide plaster applied (but note the difference), not across but along the edges of the granulating wound; the plaster seems to act as a support to the delicate, rapidly ingrowing epithelial cells. Surgeon-Captain Rodd reports also an operation for strangulated hernia with an acute appendicitis in the sac, and a case of a recurrent torsion of the spermatic cord; also he successfully removed a spleen, ruptured by a punch in the left loin. Very careful provision is being made in the Navy for thorough dental treatment for officers and men, and dental history cards for all are instituted.

[1] THE LANCET, 1920, ii., 299.

New Inventions.

A WARM ETHER BOMB.

THE advantages of administering warm ether are now generally recognised as the result of experimental and clinical observations by Gwathmey, Pembrey, and Shipway. These advantages may be briefly summarised as follows: Diminished loss of body heat; diminution of shock; diminished buccal and bronchial secretions; it is less toxic in its effects on the tissues; warm ether is less irritating to breathe in the conscious stage, and less likely to cause respiratory spasm—in consequence, induction is more rapid; after-vomiting is lessened; there is diminished risk of lung complications.

The apparatus here illustrated, whilst delivering warm ether vapour, has other advantages likely to be of value. 1. The ether is self-delivering and no bellows are required. 2. It is simple, and portable in a small handbag. 3. There is nothing to break. 4. The delivery of the vapour can be very accurately controlled by means of a needle-valve. 5. It is possible to get a stronger vapour than by other methods. 6. It is

adaptable to any ordinary open mask, and easily attachable to any closed nitrous oxide or ether inhaler. 7. It affords a convenient means of anæsthetising animals with ether if fitted either to a mask or animal box.

The apparatus consists of a strong steel vessel, capable of holding half a pint of ether and tested to withstand a pressure of 250 lb. per square inch. It is fitted with an aperture for filling, which is closed with a screw plug, and with a needle-valve to regulate the supply of vapour. The valve has a graduated ebonite top and a pointer which indicates when the valve is closed, or the extent to which it is open. The delivery pipe of the valve is connected by rubber tubing of small bore to an ordinary open ether mask by means of a small metal tube, inserted through the covering of the mask. The temperature beneath the mask is between 90° and 98° F.

The apparatus has been in use for 3½ years and has proved perfectly satisfactory, but difficulties in manufacture arose during the war. These have now been overcome and the apparatus is procurable from the Condensed Gas Company, 59-63, Grosvenor-street, All Saints, Manchester.

S. R. WILSON, M.B. Lond., M.Sc.Vict., F.R.C.S. Edin.
Manchester. K. B. PINSON, M.B., Ch.B. Birm.

Dr. Louisa Garrett Anderson has been appointed a member of the Central Committee on Women's Training and Employment.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 12, 1921.

Following-Up.

PROGRESS in clinical medicine and surgery is to a large extent retarded by the absence of definite evidence of the late results of treatment. If such evidence could be obtained there is no doubt that much of the difference of opinion regarding various lines of treatment would be overcome. It has long been felt that there is a tendency for surgeons and physicians to continue using methods of treatment which were in vogue when they were first appointed to a hospital staff, and which have since become obsolete. One or two good results in the past led to the impression that the treatment is satisfactory; whereas, if a whole series of cases had been investigated a different conclusion might have been reached. To place the various lines of treatment, and especially surgical treatment, upon an accurate basis it is essential to have some form of a "follow-through" department, whereby the cases can be traced for months or years after the treatment is instituted. Several such departments have been started in America, and in London those at the London Hospital are now well established.

Dr. C. L. GIBSON has published an analysis[1] of such a department in the New York Hospital which emphasises the value of this work. The method there followed appears, however, to be incomplete; but, as the author states, it is at present upon trial, and unquestionably will be modified and improved in course of time. For such a department to be of real value every case must be followed whether ill or well, no case must be discharged without the needful information to secure following-up, and means must be taken of determining the number of deaths which occur. By this means the results can be accurately determined over a period of many years. Apparently at the New York Hospital patients are told to come up in three months time, and to report at any time if not so well. The failure of patients to follow such instructions is well known, and apparently this still occurs in the hospital mentioned, for the statement is made that the results appear to be bad owing to the fact that a large number of patients remaining in good health, and having no complaints, do not respond to the request for investigation or examination. These difficulties are well recognised at the London Hospital, where every patient on his discharge from the ward is given a dated card for his next examination, which is usually held two to three weeks later. Three days before this date becomes due a postcard is sent to remind him. When he appears notes of progress are made on the same sheets used while he was an in-patient, so that there is no discontinuity between the in- and out-patient notes, and should he relapse and be admitted again further in-patient notes are added to the same sheets. There is thus on one bound set of sheets a complete history of the patient's hospital life. At the end of the examination he is given a date for his next visit which is entered into a book by a secretary, who sits with the surgeon, and again three days before this examination is due he is written to. Cases progressing satisfactorily may be given a date 6 or 12 months ahead. If simply told to come again in that period probably 50 per cent. would fail to appear, but when reminded with a card two or three days before the date is due it is found that only 2 per cent. of them fail to attend. By such means very accurate data of the value of operative procedures at present under dispute are obtained and by keeping separate card indexes of diseases and operative measures the notes can be readily referred to in a few minutes and the results investigated at short intervals. The relative values of disputed lines of treatment is, in this way, shown by the results of gastro-enterostomy for pyloric and lesser curve ulcers of the stomach, by the effects of partial thyroidectomy for exophthalmic goitre, and by the results of the various forms of therapy for carcinoma of the colon. The patients appreciate the department, which at the London Hospital is held, not in the out-patient department, but in a room lent by the hospital committee, so that there is a personal relationship between the surgeon and his patients, who thus feel that they have what must be regarded as a health insurance. Should they not be making satisfactory progress they can come up on the appointed day of any week, whether written to or not, and if a new disease has arisen which requires treatment in another department they are then referred to that department without loss of time. The value of continuous record is recognised by these patients to the full.

The analysis of Dr. GIBSON, although admittedly only a preliminary report, already brings forward many points of considerable interest, and, as the author states, some of the results are much better and others much worse than were expected. But he indicates clearly that if the method of following-up were more generally followed the majority of surgeons would be considerably less satisfied with some of their methods of treatment—a matter of profound public importance. The article is of value as laying stress upon the importance of a department which should have a great influence upon future treatment. There can be no doubt that it is only by such records of past history and happenings that real progress can be made in medical or surgical treatment, and it is to be hoped that establishments of this sort will rapidly be founded in all big hospitals.

[1] Gibson, C. L., "An Analysis of the Results of Six Years' Follow-up System in a Hospital Surgical Service," Annals of Surgery, December, 1919, p. 661.

Voluntary Hospital Policy.

THE opening statement of the policy of King Edward's Hospital Fund, as passed by the General Council of the Fund on Jan. 26th, should be carefully weighed. It lays down as the conclusion arrived at by those who framed it "that the voluntary system of hospital management and control should be preserved as being the most efficient method of providing at the least cost the best medical and surgical treatment, combined with advance in medical knowledge and practice." Unless the accuracy of this estimate can be impugned by expert opinion at any rate comparable with that at the command of King Edward's Fund, the voluntary system as the one which can supply

the greatest efficiency at the least cost should appeal to the Government and win the support of the country.

The situation requires not only the earnest attention of the Government, but immediate consideration and a definite early pronouncement of the policy that will be followed. Uncertainty as to when and on what conditions the State will finally intervene can only lead to decrease of subscriptions with an accompanying prospect of a larger demand upon public revenues at some not distant date. This uncertainty as to the future position of hospitals is already contributing to the diminution of their incomes, in combination with the certainty that their position of dependence exclusively on the charity of the benevolent cannot be maintained. The question of their future at its present stage is one which the Government, and the Government only, can decide, for there is no way of ascertaining the views of the public as in the case of civil politics. The range of classes and interests from whom opinions would have to be obtained is too wide, including the wealthy, or comparatively wealthy, with those who under the proposals of the Council of King Edward's Hospital Fund may be asked to contribute to the expenses of their own treatment, and those others for whom the help which the hospital affords will always be the gift of charity. Later, when the course adopted has developed, its practical success or failure should be established beyond doubt. If the contributions to be raised voluntarily fall below the proportion necessary to maintain the voluntary status at a prescribed standard, the public vote will have been given, perhaps unconsciously, against the maintenance of the voluntary policy. In that event the taxpayer or ratepayer will be called upon to bear in that very different capacity the burden which he has hitherto been asked to shoulder as a willing and charitable friend of the people. Should the voluntary subscribers make this decision there will follow the opportunity for all to judge whether the Council of King Edward's Hospital Fund was right in recommending the voluntary system as producing the best results at the least cost. Whatever opinion may then be formed the final decision will have been taken. But there will be no possibility of reverting to the voluntary system when once it has been abandoned —an anxious thought for those of us who believe, with the Council of King Edward's Fund, in the paramount merits of the system.

Deep Radiotherapy.

THERE are signs of a widening interest in what is known as deep radiotherapy, but technical difficulties attend the irradiation of the deeper structures of the body. Recent discussions at the Sections of Electrotherapeutics and of Obstetrics and Gynæcology of the Royal Society of Medicine have shown considerable dissatisfaction among radiologists, not so much with the sources of radiation at their command as with the methods in use for measuring the dose admininistered. There is at present no way of measuring the dose of radiation absorbed by a tumour situated at a depth in the body; we say absorbed advisedly, for only those rays which are absorbed can produce chemical and physical changes, and it is only the amount of radiation that is absorbed by the irradiated tissues which should be included in the term dose. In this connexion some misconception has arisen as to the virtue of very penetrating X rays; it has even been said that in the case of very penetrating rays the amount absorbed by the tumour cells is negligible. As a matter of fact the amount absorbed may be quite large. A beam of X rays issuing from a bulb, at an alternative spark gap of 10 inches, consists of a mixture of rays, generally spoken of as soft, medium, and hard, the hard type predominating with this gap; we will assume that some measure of the intensity of this composite beam can be made photographically. A sheet of aluminium 10 mm. thick, interposed in the path of the beam, has the effect of weeding out all but the hard rays; the beam passing through such a filter is practically homogeneous, but its intensity would, on measurement, be found to be reduced to about one-fifteenth of its original value. If we use for our intensity meter a strip of photographic paper, it is only the small fraction of radiation absorbed by the paper which determines the tint. Prolong the exposure in the second case 15 times, and the resulting tint will be the same as before; we have made the film absorb the necessary amount of the penetrating X rays to give the same result. Hence, in dealing with very penetrating X rays or the still more penetrating gamma rays of radium, the difficulties of getting the requisite dose into a deep-seated tumour do not arise from the degree of penetrating power; they arise first from the limited tolerance of the human skin to these rays, and secondly, from the diminishing intensity of the rays as the distance from their source increases.

Over-dosage of the skin is avoided by employing multiple ports of entry, the rays converging from various directions upon a deep-seated tumour. A gradual fall in intensity through the tissues takes place, however, not only because of the increase in distance from the source but also because of the absorption of the beam by each successive layer; and this variation will be minimal when the penetrating power is maximal. By using a very hard X ray bulb (say 12 inches spark-gap) at a distance of 30 cm. from the skin of the patient, and filtering the rays through 10 mm. of aluminium, the ratio of intensities at 1 and 10 cm. depth in the tissues would be about as 100 : 30. This may indicate to some extent how difficult it is to obtain uniformity of radiation throughout a tumour mass; and if no real uniformity exists we may well ask what is meant by the term "dose of X rays administered." An analogy would be the oral administration of a dose of strychnine; a rather difficult physiological inquiry would be needed to determine how much reaches a certain organ. We have not even arrived at this stage in our radiation measurements. Though it is true that by placing an intensity meter in the path of the beam we may say what intensity of radiation is incident upon the surface of the patient, this is not a measure of the dose; the most that can be done at present is to specify fairly accurately the way in which this intensity falls off as the beam makes its way through the tissues, and pictorial charts of this kind might prove very useful to radiologists. But this is far from being a measure of the dose of radiation. Our electroscopes or photographic films can only act as *intensity* meters. They do not measure the *energy* of the beam of X rays; to do this they would have

to absorb it completely. When modes of measurements of this kind are adopted, the time will have come to establish a unit of X ray energy, a demand that has been met in other parts of the spectrum—for example, light and heat. Contrary to the popular conception, it is a simpler matter to give a deep-seated tumour uniform irradiation with highly penetrating rays than with lightly screened X rays consisting of soft, medium, and hard constituents. The next matter for consideration is whether these soft, medium, and hard X rays have appreciably different effects upon actively growing tumour cells in all cases, if the dose absorbed is the same; in other words, have these different rays a differential action? On the answer to this question will depend very largely the warrant for an extended use of the more highly penetrating X rays. We cannot be too careful in adjudging the evidence on this point. If the evidence is brought from a radiological clinic, the first criticism almost invariably directed upon it is that it is practically impossible to arrange under clinical conditions that the cells of tumours in different cases have received the same dose. A rigorous proof of the fact that, in equal doses, "soft," "medium," and "hard" X rays have similar destructive effects upon tumour growth, can perhaps hardly be expected from the clinic itself. A greater degree of exactness is possible in examining this question as far as it applies in animal tumours; and although the evidence is limited, it points to the fact that if the tumour cells are made to absorb equal quantities of soft and of hard X rays, the quantity required for a lethal dose to the cells is not appreciably different in the two cases.

It is in such problems as deep radio-therapy that we are made to realise the necessity of laboratory investigations. Up to a certain point it looks as though the reaction of any particular type of cell is a function of the amount of energy which it absorbs and converts into some other kind: as it is submitted to radiation where the wave-length is inappropriate for this conversion of energy, there is a cessation of reaction, when we say that electro-magnetic radiations have a differential effect upon one and the same variety of cell. Otherwise, if we concentrate our attention upon one variety of ray—say some X ray beam about the middle of the three octaves made use of by the radiologist—by acting with the same beam upon a large variety of tissues, the beautiful phenomena of selective action are disclosed. In the region of the spectrum where X rays have their place, the absorption which the rays suffer in passing through different materials is intimately bound up with the nature of the atoms forming the material, and not with the molecular structure which is so important in the problems of light absorption and transmission. Atoms of high atomic weight absorb a beam of X rays more readily than the atoms of low atomic weight, with exceptions dependent upon characteristic X ray phenomena. If we restrict our attention to one type of absorbing substance, say aluminium or water (about equal in absorbing power to the soft tissues of the body), then it is found that the X rays of long wave-lengths—i.e., soft X rays—are much more absorbed than those of short wave-lengths. This of course accounts for the filtering effect of a sheet of aluminium, its tendency being to stop the long waves and to let through the short ones; some of the short ones are absorbed too, but a much smaller percentage. An X ray which had twice the wave-length of another would be absorbed nearly six times as much by a sheet of aluminium. Numerical values of the average wave-length of a beam of X rays can be found by absorption measurements, and when these come to be used by radiologists instead of the terms "soft" and "hard," a valuable aid to exactness will result. As to the antagonistic effects of different rays, Professor PECH has described some experiments,[1] which appear to show that radiation from one part of the spectrum (visible) acted in an antagonistic manner to the rays from another part (ultra-violet). We look with interest to the development of such investigations in view of their significance in radio-therapy.

Annotations.

"Ne quid nimis."

"SPECIAL" INTERNAL EXAMINATIONS IN MEDICINE.

THE dissatisfaction felt by all teachers with the examination system is as chronic as a winter cough, and as incurable. The fact that the malady increases with the age and individual distinction of the teacher makes it no easier to treat. Occasionally it lights up in acute form, and the result is a series of indeterminate conferences, culminating in a discussion such as that held on Feb. 7th at a meeting convened by the Dean of the Faculty of Medicine in the University of London. The controversial point was a proposal to institute "special"[2] internal second examinations for medical degrees, arising out of a request from University College for permission to hold such examinations in organic chemistry in March, 1921, and in anatomy, pharmacology, and physiology in July, 1921, and similarly in March and July in future years. The Academic Council have had this request under consideration for some time, and a conference was called in February, 1920, of medical representatives of the Senate and of schools and colleges of the University to discuss the expediency of granting this permission. At the conference Professor Starling was the chief advocate for the innovation. He argued that though the present system of examination was perfectly fair, it was one which absolutely destroyed originality of teaching. He held that cast-iron uniformity was not wanted, that in each school there ought to be a tone of individuality, and that it was a way of thought rather than facts that a man should acquire. Against this it might be said, and indeed was said in effect by the opponents of the proposal, that for the practice of medicine more is wanted than education in certain principles. There is, indeed, no scope for originality of teaching in the crowded medical curriculum, unless it be selective: and may this safely be allowed? No analogy can be drawn between medicine and the other faculties in this matter. It may be, and probably is, more conducive to an appreciation of English poetry to know thoroughly the period of Chaucer or Milton than to survey the whole field of English literature through the unilluminating pages of a matriculation cram-book. But the extensive medical syllabus laid down under the supervision of the General Medical Council has been framed to include only that ground which it is deemed essential for a qualified doctor to have covered, and independent examiners are surely the best judges as to whether he has covered it. No arguments throwing fresh light on the question appear to have been brought forward at the meeting of the Faculty, where after much dis-

[1] Comptes Rendus de l'Acad. des Sciences, May, 1920.

[2] A "special" internal examination is one peculiar to the particular school where it is held. It is conducted by the teachers at the school with the association of an external examiner or examiners, and is designed to enable the students to be examined on the particular course that they have been taught.

cussion it was ultimately and, we think, wisely decided that the institution of "special" internal examinations in the Faculty was inadvisable.

The University of London has under its constitution a hard struggle to maintain cohesion, and if internal examinations conducted in its name are not uniform there would seem no need for its continuance as a corporate body. The examination system should be attacked boldly and as a whole by our educational authorities, but we think that experiments might well be conducted where the struggle for life between constituent colleges and between external and internal students does not complicate a problem in itself sufficiently intricate.

THE TREATMENT OF GASTRIC AND DUODENAL ULCERS.

IN spite of the large amount of work which has been carried out in recent years, in investigating the causation of gastric and duodenal ulcers, the problem remains unsolved, especially in regard to the conditions preceding ulceration and those leading to the chronic forms. Experimentally, acute gastric ulcers similar in character to those occurring in man have been produced in animals by Dr. Charles Bolton, but these tended to heal rapidly, unless meat was given or unless some degree of pyloric stenosis was artificially induced. There is now evidence in man that under appropriate treatment, notably rest and careful diet, acute gastric ulcers may heal satisfactorily, and the same is almost certainly true of duodenal ulcers. It is in regard to the chronic ulcers that the choice of treatment is at present so difficult, and concerning this choice the most widely different opinions are held. This is well illustrated in the discussion on this subject before the Royal Glasgow Medico-Chirurgical Society, published in THE LANCET of Jan. 22nd (p. 172). It was a happy arrangement by which the discussion was opened by a physician, a surgeon, and a general practitioner, as it is important to establish the rôle of each in the treatment of these conditions. Whereas formerly treatment was almost exclusively medical, except in the case of perforating ulcers, the pendulum has swung so that in the minds of many practitioners and surgeons the bias is towards surgical treatment in the majority of cases. The immediate results of surgery in many examples of chronic ulcer where medical treatment has failed are so dramatic that there is some excuse for this surgical bias. It should, however, be remembered that surgery also fails in some cases, and that the subsequent development of jejunal ulceration, the vicious circle, and the regurgitation of bile are often dire instances of this. Indeed, the varying technique and form of operation employed by different surgeons, and the not infrequent necessity for secondary or subsequent operations, indicate that the eclectic surgical procedure is yet to seek.

It is a truism that more can be learnt from a study of failures than of successes, and what is needed now is a critical collective study of the causes of failure of both medical and surgical forms of treatment. It is admitted that the surgeon often succeeds where medical treatment has failed, and it is claimed by some of the protagonists of medical treatment that, if medical measures were employed early enough and more efficiently, the surgeon's aid would rarely be necessary. Study of the results suggests that the cases in which surgery is most successful are those of the chronic ulcers, leading to cicatrisation with its sequels of delayed emptying, stasis and dilatation of the stomach. This is almost what might have been anticipated. The aid given by surgery is mechanical, and its chief success is in relieving the mechanical sequels of ulceration. The fundamental problem of the treatment of these ulcers is a more profound one and is essentially medical. The disturbances of vital function, whether secretory, nutritive, or muscular, which lead to ulceration, have to be prevented, and for this purpose further study of the symptoms in their early stages is desirable.

We published an interesting contribution to this aspect of the problem from Dr. E. P. Poulton last week. He records the results of his investigation of the cause and relief of pain in gastric ulcer. By means of special tubes passed into the stomach and duodenum he has studied the effects of varying intra-gastric pressure. He finds that an important element in the pain of gastric ulcer is distension of the stomach, and that it can be relieved by means of the gastric and duodenal tubes. His results are also of interest as confirming the views of Dr. A. F. Hurst in regard to visceral pain, which are the subject of correspondence in our columns this week. Dr. Poulton found that when distension of the stomach was induced by the introduction of air at a pressure of 20 cm. of water, an actual sensation of pain was produced in the cases where gastric ulcer was present, while a feeling of fullness was induced in other conditions. This reaction cannot, however, be used for purposes of diagnosis since he observed it in a case of carcinoma of the pancreas in which no gastric ulceration was found post mortem. He reports benefit in a considerable number of cases of gastric ulcer treated by the aid of the gastric tube in the manner he describes, but he is careful to point out that his work is still in the experimental stage, and that he is not prepared as yet to recommend it as a general mode of treatment. He suggests that increased intra-gastric pressure may be a factor in the genesis of gastric ulceration, and his example should lead to his hypothesis being examined by other workers. We may have here a signpost, pointing to measures of value both in prevention and treatment. In the medical treatment of gastric ulcer the recognition of the earliest stages, correction of faulty regimen and diet, and systematic rather than symptomatic treatment are required. Dr. R. O. Adamson, speaking in the Glasgow discussion from the practitioner's standpoint, urged that prolonged after-treatment was an essential in the endeavour to prevent chronicity and mechanical deformities which follow in the train of chronic ulcer. It is evident that the physician and the practitioner are alive to the fundamentals of the problems of gastric and duodenal ulcer.

UNWELCOME DRUG RESTRICTIONS.

WE summarised in THE LANCET of Jan. 15th the draft regulations issued by the Home Office with a view to the carrying out of the Dangerous Drugs Act which became law last August. These regulations concern the manufacture, possession, sale, and distribution of opium, morphine, cocaine, ecgonine, diamorphine and their salts, as well as of any preparations containing not less than $\frac{1}{8}$ per cent. of morphine or $\frac{1}{10}$ per cent. of the other alkaloids. It is, we suppose, inevitable that those concerned with the legitimate use and distribution of these drugs must suffer some inconvenience from the restrictions designed to prevent their illegitimate use, but there should be a just and proper apportionment of inconvenience. After careful study of the regulations it is the concerted view of the medical, dental, veterinary, and pharmaceutical professions that the restrictions are more than can be borne. A Memorandum submitted last week by the British Medical Association to the Home Secretary states that the responsibilities and anxieties of medical practitioners are likely to be seriously increased by clerical restrictions of a kind hitherto unknown in medical practice; and the Council of the Pharmaceutical Society of Great Britain, in a lengthy manifesto, regards the objections to be so great as to demand an entire redrafting of the regulations. Nearly every regulation involves practical difficulties. From the medical practitioner's point of view it would be a hardship to insist upon the prescription being in writing when it might be typewritten or printed. Personal administration of a narcotic drug, say by hypodermic injection, without prescription appears to be vetoed, a limitation which looks impracticable in hospital work. What the Pharmaceutical Society quaintly calls the "four ledgers" regulation can hardly be fairly enforced on the practitioner who dispenses his own medicines; and the regulation requiring the percentage of any narcotic drug to be marked on the label of the bottle or package is calculated to defeat the intention of the Act itself, which was to prevent

improper use of the drug, as doctors will no longer be able to conceal from patients the nature of the prescription. One regulation apparently makes it impossible for a patient suffering from a sudden attack (say) of gall-stone colic to obtain an emergency dose for the relief of pain, nor is it at all clear how such procedures as cocainising the eye, throat, or nose, or administering a morphine suppository, are to be carried out at all under the regulations. The pharmacists naturally have grievances of their own, for while the Pharmaceutical Society has been pressing for the stricter allocation of the functions of prescribing and dispensing, the regulations prohibit pharmacists from retailing while permitting medical practitioners both to prescribe and dispense. The fact that the dispensing of poisons is already safeguarded by statutory regulations under the Pharmacy Acts appears to have been ignored by the Home Office. It is suggested that far too much importance has been attached to the value of mechanical forms and safeguards. The essential part in any control is proper entry of the drugs as received on the one side and upon the other the use made of them, the outgoings being checked, qua sales by the poison book, and qua dispensing by the prescription book. The British Dental Association is asking that the registered dentist should be authorised to be in possession of narcotic drugs so far as is necessary for the practice of his profession. The Royal College of Veterinary Surgeons desires that its diplomates should be placed with respect to the treatment of diseased and injured animals on the same footing as doctors with respect to the use of drugs in human medicine. All parties are uniting in the demand for further consultation with medical, dental, veterinary, and pharmaceutical representatives before the regulations are put in force. The Home Office will do well to accede, inasmuch as upon the willing coöperation of the four professions largely depends the effective administration of the Act. Ill-considered restrictions have their dangers. We have seen too much of successful evasion of narcotic Acts elsewhere to be content in this country with regulations which cannot be carried out both in the spirit and the letter.

DILATATION OF UPPER PORTION OF INTERNAL SAPHENOUS VEIN SIMULATING FEMORAL HERNIA.

Dr. W. E. Sistrunk, of the Mayo Clinic, has recently called attention[1] to the possibility of mistaking dilatation of the upper portion of the internal saphenous for femoral hernia. Trendelenburg has pointed out the frequency with which varicose veins are associated with incompetence of the valves guarding the orifice of the internal saphenous vein. The valves mentioned are the first between the heart and the peripheral circulation of the lower limbs. Their incompetence is probably a factor in producing dilatation of the vein. This dilatation does not often produce a swelling likely to be confounded with femoral hernia, but Dr. Sistrunk has seen one case in which mistakes were made by experienced clinicians. Exploration of the femoral ring failed to reveal a hernia, and after operation the swelling developed again. The practitioner who had originally examined the patient now diagnosed obturator hernia, and a second doctor diagnosed recurring femoral hernia. The true condition was recognised by the surgical consultant, and a second operation corroborated his diagnosis. The differential diagnosis is not difficult. In both conditions the swelling appears in practically the same position, but the venous tumour is a little lower. If pressure is made on this tumour it immediately disappears and this occurs also if the patient lies down, especially if the leg is elevated. In cases of small femoral hernia the tumour, which is usually produced by a piece of fat pushed through the femoral opening to become attached or strangulated, is often irreducible, does not disappear when the patient lies down, or when the leg is elevated. If the dilated vein is emptied by pressure while the patient is standing the tumour immediately recurs when the pressure is released. Both tumours give a sense of protrusion on coughing, but in dilatation of the vein a definite thrill is felt. In operating on the patient mentioned the vein was doubly ligated close to its juncture with the femoral and then the operation for varicose veins was performed. Most of the literature on this subject deals with cases in which a saphenous varix simulated a femoral hernia. An article on this subject was written as long ago as 1836 by Boinet. Thus not only may definite saphenous varix be mistaken for femoral hernia, but also dilatation of the upper part of the vein may.

[1] Minnesota Medicine, December, 1920

A DANGEROUS IMPERSONATION.

ON Nov. 28th, 1905, a man named Arthur or Charles Walters was sentenced by Mr. Justice Grantham to 12 months' hard labour for forging a death certificate in the name of Arthur Piercefield Walters, a duly qualified medical practitioner then residing in the Island of Eigg, but whose address was given elsewhere in the Medical Register and Medical Directory of that date. The impostor was armed with the certificate of registration, birth certificate, and testimonials of Dr. A. P. Walters, whom he believed to be abroad. It was the sagacity of the coroner in ordering an inquest, and the fact that the notice of the inquest in our columns came to the knowledge of the real Dr. Walters, that resulted in justice being done. We revive this ancient history, for it seems that the impostor is again at large. It is reported in the daily press that a man, "described as a doctor, Arthur Percival Walters," was charged at Pontypridd last week with the murder of a single woman on whom he had performed an operation. Fortunately, no confusion of identity need arise, for Dr. Arthur Piercefield Walters's address is correctly given in the current Register and Directory. The incident may serve as a rather dramatic reminder to medical men of the need to keep their entries up to date, and that for public as well as private reasons.

KROPOTKIN'S PHILOSOPHY.

THERE is one aspect of the multifarious activities of Prince Peter Kropotkin, whose death has been announced on various authority and at different dates during the week, that has an abiding interest for humanity at large and for biologists in particular. Kropotkin's view as to coöperative aid as an agent of social progress throughout the animal world was set forth in a memorable book, entitled "Mutual Aid." This was published in 1902, and combated what was then a popular conception that evolution meant simply the outcome of the struggle for existence. Against this view Kropotkin set up the doctrine that evolution is mainly the outcome of mutual aid, of coöperation, and of social effort. "The fittest are the most sociable animals, and sociability appears as the chief factor of evolution, both directly by securing the well-being of the species, while diminishing the waste of energy, and indirectly by favouring the growth of intelligence." In this connexion it is important to note the full title of Darwin's epoch-marking book, published in 1859, "The Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Existence," and also to note in what sense Darwin used the term "struggle for existence." He used it "in a large and metaphorical sense, including the dependence of one being on another, and including, which is more important, not only the life of the individual, but success in leaving progeny." By "favoured races" Darwin meant those best suited to their environment, organic and inorganic, including food-supply, shelter, climate, chances of mating, and, most important, maintaining offspring; he did not mean those which are best armed for the active destruction and extermination of their neighbours. Darwin expressly states that when one species is more successful than another "we feel sure that the cause lies as much in one species being favoured as in another being hurt." But Darwin was

also careful to point out the importance of sociability, sympathy and mutual aid, and mutual coöperation as factors in evolution, and in the "Descent of Man" many examples are given of how struggle is replaced by coöperation. "Those communities which include the greatest number of the most sympathetic members would flourish best, and rear the greatest number of offspring." Huxley at first failed to take this view, for he says: "From the point of the moralist, the animal world is on about the same level as the gladiator's show. The creatures are fairly well treated and set to fight, whereby the strongest, the swiftest, and the cunningest live to fight another day. The spectator has no need to turn his thumbs down, as no quarter is given." And again, amongst animals, as amongst primitive men, "life was a continuous free fight, and beyond the limited and temporary relations of the family the Hobbesian war of each against all was the normal state of existence." Kropotkin's "Mutual Aid" is the reply to the Nietzschean doctrine of power, and an appeal to the spacious ideas of Darwin's conception of the "struggle for existence." Moreover, he takes a wide view of evolution in respect to the social institutions of mediæval and modern times.

SOLITARY CYST OF THE KIDNEY.

THE rarity of this condition, according to Dr. Herman L. Kretschmer[1] of Chicago, who records an illustrative case in a man aged 57, is shown by the fact that Simon found only 52 cases on record in 1906, since when Dr. Kretschmer has collected another 48. The condition must be distinguished from congenital polycystic disease and from the small cysts met with in chronic nephritis, with both of which some writers are apt to confuse it. An erroneous diagnosis is the rule, and in only two cases reported by Haenisch and Bockenheimer respectively was a correct diagnosis made before operation. Solitary renal cysts have very frequently been mistaken for lesions of other abdominal viscera, such as ovarian cysts, disease of the gall-bladder, enlargement of the spleen, mesenteric cysts or tuberculous peritonitis. In several instances, though the lesion was localised in the kidney, a diagnosis of tumour, hydronephrosis, calculus, or abscess was made. Nothing definite is known as regards the ætiology, but many authorities favour the so-called retention theory according to which the cysts are due to retention caused by obstruction. Solitary cyst of the kidney occurs most frequently after 30 years of age, although isolated cases have been reported in very young children. Of the 48 cases collected by Dr. Kretschmer 22 were females, 20 males, and in 6 the sex was not stated. Premonitory symptoms are often absent, and the presence of a tumour, as in Dr. Kretschmer's case, is the first thing noticed by the patient. Hæmaturia is an occasional but not frequent occurrence. The pain is that characteristic of the more common surgical diseases of the kidney. When the tumour reaches an enormous size its presence may interfere with the action of the bowels and lead to predominance of intestinal symptoms, such as flatulence and constipation. Dr. Kretschmer's case was characterised by a large solitary cyst and multiple cysts (four in number), and also by a double or bifid pelvis. At the operation at which nephrectomy was performed a single calculus was found in the upper pelvis, which was hydronephrotic. Both the calculus and hydronephrotic pelvis had been demonstrated by X rays prior to the operation. In other cases tuberculosis of the kidney, hypernephroma, horse-shoe kidney, and anomalies of the renal vessels have been found associated with solitary cysts of the kidney. As a rule, solitary cyst of the kidney is a unilateral disease, and is thus distinguished from congenital polycystic disease, which is always bilateral. In two cases, however, reported by Zaccarini and Cunningham respectively, cysts were present in both kidneys. In the remaining 46 only one kidney was involved, cysts being found in the right kidney 21 times and in the left kidney 20 times, the side not being stated in five cases. The size of the cyst varies from that of a hazel nut to that of a child's head. Its location is almost equally frequent in the upper and lower pole of the kidney. In most of the cases in which a mention of the contents is made they are described as clear serous fluid. In Dr. Kretschmer's case the large cyst contained old clotted blood and the smaller cysts clear straw-coloured fluid. In 16 of the 48 cases in his series nephrectomy was performed and in 18 either excision or resection of the cyst. Eleven cases were discovered only at autopsy and in one no mention is made of the type of operation. In one the sac was sutured to the abdominal wound.

[1] The Journal of Urology, December, 1920.

NON-GONORRHŒAL BARTHOLINITIS.

AN abscess of the Bartholinian gland not due to gonorrhœa is so exceptional that considerable interest attaches to the case reported by Dr. H. Lippert,[1] of Elberfeld. His patient was a girl, aged 17, who had noticed a swelling of the left labium for about a week. She had never had any intestinal or bladder trouble, and there was no history of chill. Sexual intercourse was denied. Local examination showed well-marked œdema and redness of the left labium minus and some protrusion of the labium majus. Thick yellow pus was evacuated on pressure on the duct of the left Bartholinian gland. Nothing abnormal was found in the duct of the opposite side. The hymen was intact, and there was no discharge from the vagina or urethra. Microscopical examination of the discharge from the duct showed numerous leucocytes and a large number of bacilli, which cultures proved to be *B. coli*, associated with sarcinæ and non-specific cocci. No gonococci were found. Treatment consisted in dilatation of the duct and injection of 10 per cent. silver nitrate alternately with tincture of iodine. Recovery took place without incision. Dr. Lippert concludes by saying that more attention should be given to this form of Bartholinian abscess, as in a busy practice where there is no time or means of making an exact diagnosis, a patient may be wrongly suspected of gonorrhœal infection.

[1] Dermatologische Wochenschrift, Jan. 8th, 1921.

JOHN HUNTER AT "QUESTION TIME."

YOUNG men like a lecturer to be a dogmatist, and this John Hunter was not. His pupils, therefore, though they numbered among them Carlisle, Abernethy, Astley Cooper, and Chevalier—to name only a few of them—were never very numerous, and must often have been dissatisfied. It is known that Hunter permitted questions from his auditors, and often nonplussed them by the agnosticism of his replies. Several of these are classical, as when Astley Cooper asked with surprise whether a remark just made by Hunter were not a direct contradiction of something that he had stated a year ago, and the great man replied with admirable if disconcerting candour: "Very likely I did [say such and such a thing]; I hope I grow wiser every year." "Never ask me what I have said, or what I have written," he replied to another pupil, "but if you will ask me what my present opinions are I will tell you." To a pupil taking him at his word he nevertheless proved mystifying. This was Charles Brandon Trye, who afterwards became well known for his spirited defence of John Hunter, his master, against the scurrilities of Jesse Foot. Young Trye, in a very interesting MS. report of Hunter's lectures, copied by Charles Seager, F.R.C.S., about the year 1800, and now presented by his grandson, Mr. H. W. Seager, M.B., to the library of the Royal College of Surgeons of England, places it on record in a note that "I enquir'd of Mr. H. [with regard to his well-known definition of Life] if this did not make for the exploded doctrine of Equivocal Generation [Spontaneous Generation]. He told me perhaps it did, and that as to Equivocal Generation all we could have was negative proof of its not taking place. He did not deny that Equivocal Generation happened, there

were neither positive proofs for nor against it." This was a singularly honest answer, and it would have delighted Professor Huxley a century later. It was not, however, what a young and ardent admirer had a right to expect. Trye was evidently under the impression that John Hunter lectured in order to state definite truths, and accordingly he arranged his notes of the lectures in a series of aphorisms, in number 1754. He abandoned Hunter's exact phraseology. "I forsook," as he says, "any attempt of following either the language of the lecturer (except in terms of art) or the arrangement of his matter, ... only attempting to give a faithful representation of his lectures according to the sense in which I understood them at the time they were delivered, and the best information I could procure from my fellow pupils on the subject." As a matter of fact, Hunter did not set out to lay down the law; he was, as Palmer points out, advancing paradoxes, starting novelties, and, indeed, inaugurating a revolution in surgery. He was thus often as much a seeker and a questioner as his pupils.

THE ABDERHALDEN REACTION.

THE history of the Abderhalden reaction, if written, will make an interesting study in medical science, illustrating the dominance of German opinion in Europe and America until quite recent times. The reaction was first announced as a method for the early diagnosis of pregnancy, but it was quickly applied to the diagnosis of disease and apparently with astonishing success. Other serum diagnostic methods were eclipsed. The reaction became not merely a means of diagnosing diseases the morbid anatomy of which was well understood—for example, tuberculosis or cancer—but it also became an instrument by means of which hypotheses and theories could be put to the test. Obscure nervous maladies have been investigated with a view to the discovery of causes, the result being generally that glands with internal secretions are found to be at fault. Instances of this chain of doubtful evidence are provided in a book recently published by Dr. Gottfried Ewald.[1] The author devotes the first 80 pages of his book to a discussion of the ideas underlying the Abderhalden method of diagnosis—namely, the development of protective ferments in pregnancy and in disease; their origin, nature, and specificity; and the practical methods employed to demonstrate their existence. The remainder of the book deals with the application of the knowledge gained in the author's special domain of medicine, psychiatry. The copious references—289 in number, as well as half a dozen special treatises on the subject, all German—show in what a continuous stream papers on the subject poured out from German laboratories and clinics. Authors appeared who could distinguish between pyloric and duodenal ulcers by a comparatively simple examination of the patient's blood serum. There was obviously a flaw somewhere, or the study of disease was less difficult than most people had formerly thought; and it now seems clear that Abderhalden's original work, on the appearance of protective ferments, was not sound, and had been received with a too easy credulity by the medical scientific world. Competent observers in this country and in America have been unable to verify the results of Abderhalden's primary experiment; for example, Dr. W. E. Gye, in a critical study made at the Imperial Cancer Research Fund, found it impossible[2] to produce in rabbits by injection of raw egg-white a ferment which digests coagulated egg-white. Given a false premiss, the rest does not arise, and a special treatise on the subject has no practical value. Perhaps some day the information that the whole superstructure is a mistake will leak through into Germany, and the enviable capacity of German scientists for continuous intellectual effort will be directed along more fruitful lines.

[1] Die Abderhaldensche Reaktion mit besonderer Berücksichtigung ihrer Ergebnisse in der Psychiatrie. Von Privat-dozent Dr. Gottfried Ewald. Berlin: Skarger. 1920. Pp. 210. M.24.

[2] THE LANCET, 1915, i., 233.

TREATMENT OF THE WOUNDED AND MUTILATED IN FRANCE.

ACCORDING to the French Law of March 31st, 1919, all who were wounded, mutilated, or otherwise injured during the war are entitled to receive gratuitously, for the rest of their lives, whatever medical treatment their injuries may render necessary. An announcement, however, has just been published to the opposite effect. In consequence of difficulties with the Government, the Union of the Medical Syndicates of France insists that, from the Feb. 1st next, all the war victims must pay the usual medical fees. Needless to say, this bare statement caused considerable resentment, for it was naturally felt that those who have suffered for their country merit less cavalier treatment. We are pleased, therefore, to be able to show that there is no ground of complaint against the medical profession. A frequent correspondent on French affairs writes: "The wounded have been well treated throughout, and it is the medical practitioners who have good cause for complaint. As matters now stand, a former soldier invalided and discharged because of wounds received, is given a book at the town hall of his district which he presents to the practitioner he choses to consult. The latter tears out a coupon from this book for every consultation given, and this coupon is supposed to represent a fee which the local authority should pay. As a matter of fact, hardly any such payment has been effected. Therefore the medical syndicates now propose to reverse the process. They suggest the patient should pay the fee, and the practitioner will give the patient the coupon, who will present it where it has to be met. It is no part of medical practice to spend time in going from office to office to obtain the reimbursement of coupons." The French Minister of Pensions, in face of the situation, has announced, we learn, that a syllabus of regulations will soon be issued dealing with the position and some other matters germane to it. There is notably the question of the amount of the fees that so far have been rarely paid, and then vaguely according to local custom. But local custom varies very considerably, if for no other reason than that the cost of living is about double as much in Paris as, for instance, in the department of the Basses-Pyrénées. The Government naturally would find it much easier to fix a uniform fee for the whole country, though in practice it would mean that those who were in the greatest need would receive proportionately less than those who were better off. Then there is the delicate question of so organising medical relief that it shall not appear as a sort of poor relief. The soldiers, officers and men, who have suffered for their country are entitled to assistance as a matter of right; they have more than earned it, a fact none are more ready to acknowledge than the medical profession itself. Of this generous and grateful disposition the best proof is that, since the enactment of the Law of March 31st, 1919, the medical profession have willingly given their services to the patients in question and, as a rule have not received any remuneration. But it is the State and not the doctor who is indebted to the soldier; the whole nation and not merely the medical profession has to show its gratitude.

WE regret to record the death of Dr. J. C. McWalter, barrister-at-law and high sheriff of Dublin. Dr. McWalter held three M.D. diplomas, those of Dublin (R.U.I.), Durham, and Brussels, and was the recipient of honorary degrees from Dublin, Ottawa, and Alberta Universities.

THE last number we have received of the *Annali di Medicina Navale* brings the regrettable news of the retirement of the Director-General of the Italian Navy, Surgeon Lieutenant-General F. Rho, well known for his scientific medical investigations. Of all medical directors-general of navies and armies he had the greatest record of scientific work done and published, these officers being usually chosen rather for administrative ability.

TUBERCULOSIS.

A Census and Survey of Tuberculosis.

THE plan, which seems to have first been devised by Framingham in the U.S.A., of taking a tuberculosis census of a community and conducting a hustling, comprehensive campaign against this disease, is being adopted by other corporate bodies, and the results of such a survey have just been published[1] by the health authorities of Cleveland. It is at present impossible to calculate the exact value of these surveys; undoubtedly they provide useful information, but if this is to be of real value it requires careful sifting and discriminating judgment, for in no disease so much as in tuberculosis is the relation of cause to effect so liable to be misunderstood. And even if the numerous data collected are sorted out in proper perspective, and correct conclusions are drawn therefrom, the adoption of the measures indicated is still apt to be neglected.

Incidence of tuberculosis in Cleveland.—In Cleveland, with a population of about 800,000, between 1000 and 1200 persons die annually of tuberculosis, and nearly 6000 cases occur. At present from 20 to 30 per cent. of all the cases of tuberculosis are not notified before death, and a search for active cases revealed a ratio of 4·7 to every annual death. It is admitted that this ratio is misleading, for in Framingham the search for active cases was so productive that it showed a ratio of approximately nine living cases to one death per annum. Another discovery reflecting on the inadequacy of the present methods of diagnosis is the fact that 50 per cent. of all the cases were in an advanced stage of the disease when first diagnosed. This proportion, it is calculated, could be reduced at least to 25 per cent. by the exercise of greater care and skill on the part of general physicians. In Framingham, on the other hand, the high standard of diagnostic skill has led to 74 per cent. of all the cases being detected in the first stage of the disease. Framingham, by the way, is frequently held up as a model and a standard for comparison in the matter of prevention and early diagnosis.

Milk-supply and tuberculosis.—An attempt was made to study every aspect of the milk-supply of Cleveland as far as it concerned tuberculosis. According to the laws already in force, all certified milk must be obtained from tuberculin-tested and negatively reacting cows, from regularly inspected establishments, and handled by medically inspected employees. All milk must be sold according to specified grades, and all uncertified milk must be pasteurised. So far, so good. But these legislative measures do not, and cannot, control the amount of milk consumed, and it was found that only 44 per cent. of the amount of milk considered desirable was consumed. The actual figures were 1·61 quarts per day for a family of 3·1 children, whereas the estimated quantity considered necessary for a family of this size was 3·6 quarts.

Want of specialists.—Scattered throughout this report are reflections on the quality of the medical and nursing staff engaged on tuberculosis work. It is, apparently, difficult to secure enthusiastic and specially trained physicians for tuberculosis work in the dispensaries. The physicians are for the most part men with no special training, and their work is part-time and receives only part of their interest. The nurses, too, are given tuberculosis work only as a part of their total work, and it is admitted that some public health representatives in Cleveland find that tuberculosis work has suffered from the want of specialisation. But, it is added, there are many advantages to offset the defects of the "generalised" nursing system.

Bureau of statistics.—This department is mentioned only to be vigorously criticised. It provides a very indifferent service, it has no full-time chief, and the methods of developing statistical data seem to be informal and haphazard. No effort is made in the study of tuberculosis mortality to eliminate non-resident deaths and to include the deaths of residents dying out of town. It is evident from criticisms such as the above that the authors of this survey do not feel constrained to include "whitewash" in their equipment.

Recommendations.—An aggressive campaign of industrial hygiene to promote the education of employers and employees alike is recommended, as well as the linking up of medical, nursing, and clinical facilities with industry. The routine examination of employees for early signs of disease, and the consistent supervision of arrested cases after return to industrial pursuits are urged as of great importance. Other recommendations are: promotion of home hygiene, preventorium activities, such as summer camps, and possibly the socialisation of the milk-supply. With reference to sanatorium beds which remain empty, and to the premature discharge of patients at their own request, an extensive popular educational campaign is advocated, as well as the appointment of only highly qualified medical officers to sanatoriums. The calculation is made that at least one bed should be provided for every annual death from tuberculosis—a standard which would necessitate the present number of beds in Cleveland being approximately doubled. It is customary in Cleveland for arrested cases to be observed for a period of only six months. This, it is admitted, is far too short. Brief as is this summary of the Cleveland Survey, it shows that the authorities of a progressive community are attempting to set their house in order with thoroughness and impartiality.

Fall of the Tuberculosis Death-rate in Germany.

Professor B. Möllers[2] of Berlin has come to the conclusion that 1918 marked the culmination of the upward wave of tuberculosis in Germany, and that the subsequent ebb shows signs of being rapid. He calculates that, as a result of the war, German towns with a population of 15,000 or more lost approximately 100,000 more inhabitants from tuberculosis than they would have done had the death-rate of 1913 been maintained throughout the years of the war. As his tables show, the mortality in the first half of 1914 was 1·75 per 1000, in the first half of 1919 it was 3·44 per 1000, and in the first half of 1920 it was only 2·08 per 1000. He also calculates that in the first half of 1919 the death-rate was 97·1 per cent. higher than in the first half of 1914, but that in the second half of 1919 this excess over the figures for the corresponding period in 1914 was only 36·3 per cent., and in the first half of 1920 only 18·9 per cent. higher.

Prevention of Tuberculosis at Sea.

It has long been admitted that the conditions under which Norwegian fishermen lived in motor-boats were most unhygienic, and reports were frequent of able-bodied fishermen going to sea for some weeks in these motor-boats and returning home with tuberculosis. In 1913 the Norwegian National Association for Combating Tuberculosis took up this matter, and through the Ministries of Health and Shipping it succeeded in introducing far-reaching reforms, which came into force in December, 1919. To judge by the account given in *Tidsskrift for Den Norske Laegeforening* for Nov. 15th, 1920, these reforms were badly needed and much overdue. As many as five to six men had often to spend the day and night in a tiny cabin in which they had to dry their clothing, reeking with fish offal, as well as cook and eat their food. The floor was bespattered with tobacco juice and fish debris, and there was little or no ventilation for the mixed odours of tobacco-smoke, bilge water, cooking food, fish offal, and the ship's engine. Thanks to the initiative and hustling vigour of the National Association, numerous regulations were drawn up to mitigate these insanitary conditions. It is now incumbent on the owners of fishing boats to renovate (paint) their cabins once a year, to prevent pollution by bilge water and cargo of the air in these cabins, to clean the ballast and bottom of the boat at the end of each fishing season, to provide adequate ventilation for each cabin as well as lighting, to supply a berth of sufficient size to each sailor, and to fit banisters or handles to steps going down to a cabin so that sailors do not have to grip with their hands the steps which they have soiled with their feet. The National Association took steps last summer to prevent the lapse of these reforms to a dead letter.

[1] Cleveland Hospital and Health Survey: Tuberculosis, Part 4, 50c.

[2] Deut. Med. Woch., Jan. 6th, 1921.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Statistics on Suicide in 1920.

A REMARKABLE drop in the number of attempted or committed suicides was noted during the years of war. Whilst in 1913 it was about the same as a year ago—viz., 1500—in 1915 it fell to 881. The figures for the next three years were 842, 804, 700. In 1919, the first year of peace, the figure rose to 1138 cases; in 1920 there were 1189. The highest number—50—occurred as usual during May. The favourite means adopted was, as it has been for many years, hanging (122 persons). Poisoning comes next, with 51 men and 67 women, totalling 118. Suicides by shooting, 80 (65 men, 15 women); by jumping from windows, 57 (13 men, 44 women); 53 persons (28 men, 25 women) threw themselves into water. Injuries inflicted by sharp instruments, by throwing oneself before a vehicle, or by burning were chosen only in a few instances. The age record was 85 years; a man who hanged himself heads the list. A pleasing feature to be noted is the absence of children's suicides for two years.

Mr. Rockefeller's Gift to the Medical Faculties of Austria.

A representative of Mr. Rockefeller called recently upon Professor Haberda, the dean of the Medical Faculty of Vienna University, and informed him that he had been instructed by his principal to present a sum of 20,000 dollars to each of the universities of Vienna, Graz, Innsbruck, Prague, and Budapest. The money is to be devoted solely to the procuring of materials necessary for medical apparatus and laboratories, and the donor has stipulated that an equal sum be raised by the faculties themselves. But it is impossible in this country to get together such a large sum from the funds at the disposal of the universities; nor is it possible to make the students pay fees high enough to reach these figures. Therefore it was arranged, with the consent of Mr. Rockefeller or his representative, that the foreign students, who on account of the exchange value of their money are able to pay high fees, be taxed in order to increase the revenue of the University. Thus, from February they will have to pay a sum of Fr.20 a month for using the University laboratories, apparatus, &c. Nevertheless, it is feared that it will be impossible even by these means to equal the sum of Mr. Rockefeller's gift.

Opening of New Hospitals in Vienna.

Within the last few months a number of new hospitals were opened in this city, or in its vicinity, in spite of the precarious state of the municipal finances. A new building, accommodating 500 patients, situated in extensive grounds and offering ample opportunity for garden work and agricultural occupation, has been devoted to the treatment of venereal diseases of females. Here the patients will also be given psychical treatment, which will no doubt be badly needed by the prostitutes and others who will enter the hospital. Another new hospital, also for 500 patients, containing wards for medical and surgical cases and out-patient departments for diseases of children, eye diseases, and oto-rhino-laryngological work, will be opened shortly on the outskirts of the city, where it is much needed. A special hospital for the study of nervous diseases and conditions like speech-disturbance and writers' cramp has been attached to one of the institutions set apart for shell-shocked cases and injuries to the head. Owing to the munificence of a Swedish committee an institution accommodating 400 tuberculous patients has been erected on a mountain slope not far from Vienna; there the patients, who will mostly be children of the middle classes stricken with the "morbus Viennensis," as tuberculosis is here termed, will be received for a period of not less than three months each. Ample opportunity for treatment by open air as well as by sunlight and electricity is there given. Another special hospital in Baden, a suburb of Vienna, formerly an army hospital, has now been converted for the treatment of rheumatic diseases. In this institution three hot sulphur springs (known to and used by the Romans) are utilised, in combination with massage, modern gymnastics, and electro-therapeutics. The results obtained in this up-to-date hospital are most gratifying both to patients and staff.

Epidemic of Hiccough in Austria.

From various parts of the country, both rural districts and towns, there come reports of an epidemic characterised by persistent and tormenting attacks of hiccough. As a rule these attacks are preceded by an ordinary cold, by bronchitis, cold in the head, "influenza," or the like. Disturbances of the gastro-intestinal tract are rarely the predisposing cause. The age-incidence is not of importance, as both infants and elderly people are affected. Severe exhaustion, giving rise to anxiety, is not rare; in debilitated persons attacks of heart failure sometimes occur after persistent hiccough. The fits last from a few seconds, with short interruptions, up to hours; they generally cease after 5–6 days, leaving the patient very much prostrated; recovery is generally uneventful and rapid. Treatment must be confined to symptomatic remedies—bromides, morphia and its derivatives, care of the heart, and frequent though small quantities of food are very useful. The ætiology is up till now a mystery; no definite micro-organism or nervous condition can be held responsible for the affection.

Experiments on the Effects of Saccharine.

Owing to the distribution of saccharine instead of sugar by the Government to the public, reports of its harmful effects were circulated by persons interested in the sale of sugar. Therefore a large number of experiments were conducted, and compared with other results obtained in the Government saccharine factories. An official announcement was then made to the effect that for the 30 years during which saccharine has been produced by Austrian factories not a single case of harmful effect has been known; that saccharine has been shown to be quite indifferent, of no food value, but passing through the body without any noticeable action. In physiological experiments one person has been given up to 100 g. of saccharine (equal to 55 kilos of sugar in sweetening power) within one day without any undesirable effect, and in another series of experiments as much as 500 g. of crystalline saccharine, equal to 220 kilos of sugar, had been given to one individual within nine days, also without any effect. It was also pointed out that diabetic persons frequently take large quantities of saccharine for years without suffering any harm, that saccharine is to be compared to a condiment, but that it is of course important that the product be absolutely pure.

SWITZERLAND.

(FROM OUR OWN CORRESPONDENT.)

Foot-and-mouth Disease.

Foot-and-mouth disease has assumed considerable importance in this country. It can be called now epizoötic. Some time ago the disease was the subject of discussion at a joint meeting of the Medical Society and Veterinary Society of Berne. Berne is the centre of one of the most important agricultural districts of Switzerland, therefore the problem has aroused considerable interest. The following facts seem to be the most noteworthy features of that discussion. During the last century several epidemics have been recorded, the most serious after the Franco-Prussian War of 1870–71. The opening of the different transalpine railways has greatly augmented the dangers of infection, therefore a limited number of frontier stations have been designed for the import of cattle which are provided with permanent official veterinary surgeons to secure control. It has been ascertained that the present epidemic found its way into Switzerland from Italy, the first outbreaks being recorded in the canton Ticino and in the Gruyère

district. Although all transport of cattle was stopped at once the disease spread rapidly, a proof that there are carriers of the most different kind. It is probable that man is one of them. Amongst game, especially deer and chamois, the disease has never been found. The policy for combating the disease has been roughly the following. Once the nature of the disease is established all the cattle of the farm are slaughtered immediately on the spot. In the neighbouring area all movements of animals are strictly prohibited. The affected centre is isolated for six weeks. The stables are thoroughly disinfected; dogs, cats, pigeons, crows, &c., around the house are killed by the police. At a later period of the epidemic wholesale slaughtering has been given up and more attention has been paid to the movements of man. Pastures were declared prohibited area. In some parts of the country the travelling public had to submit to some measures of disinfection—e.g., the footwear had to be washed in a solution of lysol and the clothes were sprayed with corrosive sublimate. Some of these measures had not been ordered officially but were carried out by the farmers in self-defence. As their application was clumsy, and in some cases so unscientific as to be humorous, the effect was nil.

In some districts the local authorities went so far as to interfere with the railway and road traffic, not only after the outbreak of the disease, but in some cases as a measure of prevention. These things became a public nuisance so that the Federal Government had to intervene and to enforce some general principles for combating the disease. Happily the slaughtering had little or no influence on the milk production. Of the 800,000 milch-cows of Switzerland only 8000 were slaughtered during the year.

Of the pathology of the disease the following points seem to have been elucidated. The cause is a filtrable virus, the resultant immunity is of a very short duration, the same cattle may have the disease three or four times during one year. Experiments have shown that meat and blood from infected cattle is not infectious. The town of Berne consumed for a long time practically exclusively meat of infected cattle. The milk is, on the contrary, contagious. The question of foot-and-mouth disease in man is still open for discussion. It appears that so far no cases have been recorded in Switzerland, where the diagnosis had been surely established. Statistics have shown that outbreaks of aphthous stomatitis amongst children do not occur synchronously with foot-and-mouth disease in cattle. The contrary, I understand, prevails in Great Britain.

Scientific knowledge of the disease is still very small, and therefore doctors and veterinary surgeons fight in the dark. Some months ago the Federal Government nominated a strong committee of leading clinicians and pathologists, both human and veterinary, to investigate the causes.

Feb. 3rd.

THEORY OF RELATIVITY.—A special issue of *Nature* on Feb. 17th will contain an authoritative scientific statement on relativity from different points of view. The 14 articles will include: A Brief Outline of the Development of the Theory of Relativity, by Professor A. Einstein; Electricity and Gravitation, by Professor H. Weyl; Theory and Experiment in Relativity, by Dr. Norman R. Campbell; the Metaphysical Aspects of Relativity, by Professor H. Wildon Carr; the Relativity of Time, by Professor A. S. Eddington, F.R.S. A bibliography of books and pamphlets on relativity will conclude the issue.

BROMPTON HOSPITAL AND THE L.C.C.—The relations between the Brompton Hospital and the London County Council have been made the subject of comment. The existing arrangements are that the Council send a certain number of patients to the hospital and to the sanatorium at Frimley. Those sent to the hospital are chiefly for observation and diagnosis. When the latter is established, recommendations are made as to future treatment by the honorary staff. Certain of the medical officers of the Council visit the hospital regularly to coöperate with the staff in regard to these recommendations. A permanent scheme is under discussion.

Public Health.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

PADDINGTON: 1914–18, INCLUSIVE.

Dr. R. Dudfield issued his last report for the year 1913, and has decided to issue the reports for the following seven years in two volumes, the first to cover 1914-18 and the second to serve for 1919 and 1920. In a preliminary statement he points out that the mortality tended to increase with the prolongation of hostilities, and that this was more particularly observable in the mortality at ages under one year; that the only disease which left an outstanding record during the war was influenza; and that at the close of the war there were considerable arrears of sanitary work to be cleared off.

The population estimates being very vague he has thought it wise to adopt, instead of rates, a comparison between the actual deaths and births of the quinquennium 1914–18 with those of the preceding quinquennium 1909–13. As the population was a slightly decreasing one up to 1914 this method ought to give results not dissimilar from the comparison of rates. The number of births has decreased from 3031 in 1909 to 2017 in 1918, a fall of 33·5 per cent. The percentage of illegitimate to total births has increased from 6·17 in 1914 to 10·41 in 1918. An interesting change has taken place in midwifery practice. In 1914 little more than one-third of the births were notified by midwives, whereas in 1918 the midwives reported 61 per cent. Will the change be temporary or not?

The total deaths for the war quinquennium were 9·3 per cent. higher than for its predecessor. Dr. Dudfield ascribes the relative immunity of the country from enteric fever and small-pox to the high standard of the preventive medical service in the army and the vigilance of the port sanitary service. He emphasises the value of inoculation for preventing enteric fever, and at the same time points out that the proportion of unvaccinated children in Paddington has risen from about 10 per cent. at the beginning of the century to about 30 per cent. during 1917 and 1918, and that "at no very distant date the proportion of the unprotected to the total population will become so large that small-pox will not be kept in check by the vigilance of health officers." In Paddington during the war quinquennium there was an appreciable increase in maternal mortality from puerperal fever and accidents and diseases of parturition. There was also some increase in the notifications of ophthalmia neonatorum. The number of notifications is not a very reliable guide to the prevalence of this disease, and it would be interesting, if it were possible, to have the cases followed up and the amount of the damage to the eyes recorded. Deaths from pulmonary tuberculosis in Paddington showed a 10 per cent. increase for males and a 20 per cent. increase for females during the war years. This is in accord with the experience of other towns. A table is given showing that the deaths from pulmonary tuberculosis occurred at earlier age-periods among women than among men. Attention is drawn to the large number of deaths from tuberculosis of persons who had not been notified during their lifetime. Thus, no less than 64 persons died in their homes in the borough and 32 in local institutions without being notified. The fact that 54·4 per cent. of the cases of pulmonary tuberculosis died in institutions, as compared with 48·3 per cent. in pre-war years, indicates progress in the segregation of advanced cases.

The comparison between the two quinquennia shows a rise in infant mortality from 106 to 109. "Of 1016 illegitimate children born during 1914–18 263 died within the first year of life—equivalent to a mortality of 258 per 1000 births, as compared with 96 among legitimate children." This very high "illegitimate" mortality is somewhat lower than in 1909–13. Perhaps the worst features in the child mortality are the increases in the deaths during the second, third, fourth, and fifth years of life, when comparison is made with

the previous quinquennium. These increases are shown by Dr. Dudfield to be 12 per cent. for the second year, 21 per cent. for the third year, 70 per cent. for the fourth year, and 7 per cent. for the fifth year.

We now turn to the administration section of the report. The author says: "The need of inspection for the discovery and remedy of sanitary defects was greater at the end of 1918 than it had ever been before." The report describes the flooding with sewage caused by the rainfalls of June 16th and June 28th, 1917, at the rate of 1·04 inches and 0·75 inch per hour respectively. The smaller number of children of school age found on the canal boats seems to indicate that their education is receiving more attention. In Paddington, as elsewhere, the black smoke nuisance was left alone during the war owing to the bad class of fuel available, and to the skilled stokers being wanted for the services. As dense black smoke from chimneys serving boiler furnaces is quite unnecessary, it is much to be hoped that this neglected matter will be taken up in all parts of the country with vigour. Dr. Dudfield points to the need for a much more close inspection of the tenement houses—the bugbear of sanitary reformers in every town—and for the resumption of the "annual cleansings."

The report on the Sale of Food and Drugs Acts shows the extremely unsatisfactory state of the milk-supply. The percentage of adulterated samples taken at the railway stations ranged from 40 to 50 during the war years. The position of the "preservatives in foods" question is pointed out, and examples are given of sausages with over 11 gr. of boric acid per lb., lime-juice cordial containing over 11 gr. per pint of salicylic acid, brawn with over 11 gr. per lb. of boric acid, &c., and it is suggested that the legislature should settle when (if at all), and in what quantities, these additions to food should be permissible.

We look forward with interest to Dr. Dudfield's second volume dealing with the two post-war years.

URBAN VITAL STATISTICS.

(Week ended Feb. 5th, 1921.)

English and Welsh Towns.—In the 96 English and Welsh towns, with an aggregate population estimated at 18½ million persons, the annual rate of mortality, which had been 12·8, 13·3, and 12·3 in the three preceding weeks, rose to 13·1 per 1000. In London, with a population of 4½ million persons, the death-rate was 13·3, or 1·7 per 1000 above that recorded in the previous week, while among the remaining towns the rates ranged from 5·8 in Rotherham, 6·5 in Acton, and 6·9 in Cambridge, to 20·1 in Warrington, 20·7 in West Hartlepool, and 26·8 in Tynemouth. The principal epidemic diseases caused 238 deaths, which corresponded to an annual rate of 0·7 per 1000, and comprised 82 from infantile diarrhœa, 65 from diphtheria, 56 from whooping-cough, 19 from measles, 14 from scarlet fever, and 2 from enteric fever. Whooping-cough caused a death-rate of 2·0 in Warrington and 2·3 in Wigan, and diphtheria of 1·9 in Ilford. There were 4018 cases of scarlet fever, 2767 of diphtheria, and 1 of small-pox under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, against 4171, 2682, and 1 respectively at the end of the previous week. The causes of 36 of the 4649 deaths in the 96 towns were uncertified, of which 12 were registered in Birmingham, and 3 each in London, West Bromwich, and Leicester.

Scottish Towns.—In the 16 largest Scottish towns, with an aggregate population estimated at nearly 2½ million persons, the annual rate of mortality, which had been 15·9, 15·8, and 16·3 in the three preceding weeks, fell to 14·9 per 1000. The 307 deaths in Glasgow corresponded to an annual rate of 14·5 per 1000, and included 16 from whooping-cough, 9 from infantile diarrhœa, 4 from diphtheria, and 1 from scarlet fever. The 148 deaths in Edinburgh were equal to a rate of 17·3 per 1000, and included 2 each from scarlet fever, diphtheria, and infantile diarrhœa, and 1 from measles.

Irish Towns.—The 114 deaths in Dublin corresponded to an annual rate of 14·1, or 1·7 per 1000 below that recorded in the previous week, and included 3 from diphtheria, 2 from infantile diarrhœa, and 1 from scarlet fever. The 114 deaths in Belfast were equal to a rate of 14·2 per 1000, and included 6 from whooping-cough, 2 from diphtheria, and 1 from infantile diarrhœa.

The Services.

THE ARMY DENTAL CORPS.

AT the outbreak of war there was no adequate provision for dental services to the troops, and this was keenly felt by those forming the original Expeditionary Force. The need for such service was early recognised by those in authority, and in October, 1914, a commencement was made by the appointment of six dental surgeons. With the growth of the Army the dental service was increased, and at the time of the armistice commissions were held by over 800 dental surgeons. It is universally acknowledged that the work of these officers added to the efficiency of the forces, and with the return of the Army to a peace basis the Government has wisely decided to form an Army Dental Corps. The number of officers has not been stated, but we feel sure with the experience gained in the war an adequate service will be provided. It is possible that when these data are forthcoming there will be some who consider the number insufficient, but in any criticism that may be offered due consideration should be taken of the difference between an Army on a war or a peace basis. In peace time the medical examination is more searching, and only those dentally fit or able to be easily rendered dentally fit are accepted. Further, we believe that there is an Army Order stating that no man requiring dentures can be recruited. Under these conditions the appointment of one officer for each 2000 men should be sufficient. The rank of officers in the corps is to range from lieutenant to lieutenant-colonel and the pay, although on a slightly lower scale than that of the Royal Army Medical Corps, should be sufficient to attract the right type of officer. The formation of an Army Dental Corps is a distinct step in the right direction, and no doubt a scheme will gradually be evolved for its rapid expansion in the event of war. Provision will be needed for the Territorials and for a reserve of officers. Arrangements will, we assume, be made to enlist the services of the dental schools with their well-equipped laboratories.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been notified: Surg.-Cmdrs. J. H. Lightfoot to *Conqueror*, J. Boyan to *Defiance*, C. T. Baxter to *President*, additional, for R.N. Recruiting Headquarters.

Surg. Lieut.-Cmdr. F. C. Wright to *Birmingham*.

Surg.-Lieuts. F. L. H. MacDowel to Haulbowline Hospital and Dockyard, and J. C. Brown to Special R.M. Battalion.

ARMY MEDICAL SERVICE.

Col. S. L. Cummins retires on retired pay.

TERRITORIAL FORCE.

Major Sir R. Jones, from 1st Western General Hospital, to be Colonel, and to be granted the honorary rank of Major-General.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Col. P. S. Lelean to be Brevet-Colonel.

The undermentioned Majors to be Brevet Lieutenant-Colonels: H. M. J. Perry and (Acting Lieut.-Col.) W. P. MacArthur.

Lieut.-Col. M. P. Corkery is placed on the half-pay list on account of ill-health.

Major H. G. Pinches retires on retired pay and is granted the rank of Lieutenant-Colonel.

Captains to be Majors: (Bt. Majors) J. A. Manifold, P. S. Tomlinson, M. J. Williamson, S. S. Dykes, W. H. O'Riordan, C. T. V. Benson, (Acting Lieut.-Col.) W. P. MacArthur, (Acting Major) R. C. Priest, (Temp. Major) A. D. Stirling, G. P. Taylor, R. C. Paris, E. C. Lambkin, O. W. McSheehy, C. L. Franklin, M. White, J. J. D. Roche, H. F. Joynt, A. S. M. Winder, H. R. Edwards, J. R. Yourell, P. G. M. Elvery, J. J. H. Beckton, W. B. Rennie, and W. Mathieson.

Capt. L. F. K. Way retires receiving a gratuity and is granted the rank of Lieutenant-Colonel.

Temp. Capt. W. L. Hay relinquishes the acting rank of Major.

To be Temporary Captains: F. W. Harlow (late temporary Captain) and Temp. Lieut. O. T. J. C. de H. Clayre.

The undermentioned Lieutenants (temporary Captains) to be Captains: P. A. Stewart, J. C. Collins, W. I. FitzG. Powell, G. W. B. Shaw, and W. C. Mackinnon.

TERRITORIAL FORCE.

Capts. R. G. Badenoch and A. Robertson to be Majors.

Majors J. L. Menzies (late R.A.M.C.) and P. J. Gaffikin (late R.A.M.C., S.R.) to be Captains and relinquish the rank of Major.

Capts. H. W. Featherstone (late R.A.M.C., S.R.) and T. Carnwath (from T.F. Res.), to be Captains.

Capts. (Acting Lieut.-Col.) J. R. Pooler and (Acting Major) W. C. Gunn relinquish their acting rank on ceasing to be employed.

Capt. A. C. Mallace resigns his commission and is granted the rank of Major.

Capt. J. H. Barclay resigns his commission and retains the rank of Captain.

Capt. T. D. Webster (late R.A.M.C.) to be Lieutenant and to relinquish the rank of Captain.

Second Lieut. R. J. Dyson (from T.F. Res., W. York. Regiment) to be Lieutenant.

Correspondence.

"Audi alteram partem."

THE DIET OF WELL-TO-DO CHILDREN.

To the Editor of THE LANCET.

SIR,—In connexion with the correspondence on this subject appearing in THE LANCET, may I direct attention to the effects on the gastro-intestinal tract of deficient and ill-balanced foods? In my experience the commoner food faults among the children of the well-to-do are (*a*) an insufficient supply of vitamines—rarely their complete absence; (*b*) a disproportionate richness of the food in carbohydrates, and, when the provision of fresh fruit and green vegetables is scanty and the milk has been super-heated, an insufficient supply of salts—notably of calcium.

The effects of such faulty food, as I have observed them in wild monkeys under experimental conditions, are the following:—(1) Congestion of, and hæmorrhage into, the walls of the stomach and intestine; (2) atrophy of the myenteron; (3) degenerative changes in the ganglionic plexus of Auerbach; (4) dilatations of various parts of the tract; (5) increased tendency to intussusception; (6) inflammatory states, especially of the colon; (7) invasion of the bowel walls and the adjacent lymphatics by intestinal bacteria; and (8) depressed functional activity of the digestive glands. The severity of these changes is dependent upon the degree of avitaminosis, the character and extent of the ill-balance of the food, and the duration of the animal's subjection to it. The more immediate clinical evidences of gastro-intestinal derangement are loss of appetite, anæmia, vomiting (occasionally), digestive disturbances, and diarrhœa; the more remote are distended abdomen, profound anæmia, "air-locks" in the small bowel, dilatation of the stomach and colon, and colitis—the last one of the commonest manifestations of deficient feeding.

There can, I think, be little doubt that the pathological changes above referred to, especially those involving the neuromuscular control of the bowel, afford reasonable ground for attributing to the long-continued use of deficient and ill-balanced food an important part in the production of gastro-intestinal stasis. These changes are similar to those found by Professor Arthur Keith in the colons removed from sufferers from this disease at operation. A contributory factor in their production is the depressed functional activity of the endocrine organs—notably of the suprarenal glands, the pituitary body, and the thyroid gland—which results from the same cause. The interdependence of healthy gastro-intestinal function and efficient endocrine action is so well recognised as to call for no further comment.

I am, Sir, yours faithfully,

Oxford, Feb. 4th, 1921. R. MCCARRISON.

REFERRED PAIN.

To the Editor of THE LANCET.

SIR,—In the discussion which centres around the question of referred pain and the viscero-sensory reflex, one simple observation seems almost invariably to escape remark, both by the champions of the viscero-sensory reflex and by those who are not so greatly impressed with its importance. It is that *the superficial hyperæsthesia which constitutes the reflex is only present during the presence of pain or for a limited period thereafter.*

To take the instance of a gastric ulcer, it will be readily accepted that in the majority of instances—especially in hospital and consulting practice—we visit, or are visited by, sufferers from ulcer at a time when they are free from pain. At these times the reflex is usually absent, and most of us have consequently come to regard local superficial hyperæsthesia as an uncommon sign and of slight diagnostic value. If, however, the patient is seen during an attack of pain, or within a variable, but limited, time after the pain, hyperæsthesia is more often present and its location may well help to establish a more accurate diagnosis. In other words, it is not the presence of the ulcer but of the pain consequent upon the ulcer which is the stimulus for the reflex. The patient himself quite frequently volunteers a remark which seems to bear out the truth of this observation, for he may tell us that he cannot bear the touch or friction of his clothes over the skin of the epigastrium in the neighbourhood of the period of his worst pains. It has long been recognised that anginal referred pain and tenderness of skin and muscle are present only during, or for a short time after, the attack, and no one would, I think, maintain that the sign was to be elicited in the sometimes long intervals between the attacks. In other words, it is not the presence of a cardiac lesion, but of cardiac pain, which serves as the stimulus for the reflex. We must also recognise that the stimulus is not, whether in quantity or quality, always adequate to produce the reflex, and that in this respect the viscero-sensory reflex does not differ from other established forms of reflex action.

In each of the cases described by Dr. A. Murdoch in his letter in to-day's issue of THE LANCET the factor of recent pain—though in the second case Dr. Murdoch refers to the manipulation as supplying "the necessary stimulus"—was present. In this second case the factor of recent pain was, on the occasion of the examination by Mr. D. Ligat, absent, and so, naturally, was the reflex. In Dr. A. F. Hurst's 10 cases it would be important to know whether pain was a present or recent symptom at the time of application of the test.

I believe the foregoing to be a correct statement of the facts of referred hyperalgesia in visceral disease, and an explanation also of the existence of the two camps which contend on the one hand that viscero-sensory reflexes are of considerable, and on the other hand of inconsiderable, diagnostic value. If the statement is correct, it should serve to stimulate us all to endeavour more often to see our patients during the presence of pain, and even in some instances to induce pain, by giving food or other means, in order that we may accomplish greater accuracy in diagnosis. As to the question of the existence and cause of actual visceral pain, Dr. Hurst's investigations and all clinical experience point to the conclusion that visceral sensation, including pain (whether gastric, intestinal, cardiac, renal, vesical, or elsewhere produced) is dependent on altered intravisceral tension, and that all visceral pain is relieved by lowering intravisceral tension.

I am, Sir, yours faithfully,

J. A. RYLE.

The Warden's House, Guy's Hospital, Feb. 5th, 1921.

To the Editor of THE LANCET.

SIR,—If, before instructing me in the elements of clinical methods, Dr. A. Murdoch had taken the trouble to read my Goulstonian lectures, which were published in THE LANCET in 1911—three years before he began to look for the viscero-motor and viscero-sensory reflexes—he would have found in them a full discussion of these symptoms, the importance of which I have constantly taught for the last 14 years. He would have realised that your references to my observations on Sir Berkeley Moynihan's patients with duodenal ulcer were only concerned with cutaneous hyperæsthesia, which is very rare indeed in cases of ulcer, in contrast with deep tenderness and rigidity, which are almost constantly present, especially at the height of an attack of pain. With regard to visceral pain the evidence I brought forward in 1911, and all my experience since, have convinced me that viscera themselves are sensitive, and that it is a matter of great clinical importance to distinguish between true visceral pain and tenderness on the one hand and reflex visceral pain and tenderness on the other.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

Devonshire-street, W., Feb. 6th, 1921.

THE OPERATIVE TREATMENT OF PROLAPSE.

To the Editor of THE LANCET.

SIR,—I have been much interested in Mr. J. P. Lockhart-Mummery's communication to your pages of to-day on the Operative Treatment of Prolapse (Procidentia) of the Rectum in Adults, although, unlike him, I am not "convinced that it is far superior to any of the other methods." I have obtained results at least equal to those he mentions by the submucous injection of paraffin wax, as described by me in THE LANCET,[1] and since epitomised in successive editions of Jacobson's "Operations of Surgery," combined with a plastic operation for the restoration of the anal canal very similar to that detailed by Mr. Lockhart-Mummery. This plastic operation is not necessary in every case, but is always carried out whenever the anus is patulous and the sphincter weakened—as obtains in most instances of long-standing prolapse in adults. One of the most extensive cases I have treated is a lady upon whom, in 1906, at the age of 66, I performed this operation for an 8-inch prolapse associated with such extensive excoriation of the constantly prolapsed bowel as to confine her to bed; she is now, at the age of 81, able to get about actively and to strain, without any recurrence of the prolapse. Up to the present I have not heard of any case of failure after I have performed the combined procedure, nor have I had any serious complication afterwards. In comparison with Mr. Lockhart-Mummery's operation I claim this method to be very much simpler and less severe, and to be associated with very much less discomfort in its after-treatment. The removal and replacement of the "as much as 40 yards of gauze" at the end of the first week in his method requires a second anæsthetic, and when this is again removed five days later, although it is not stated that anæsthesia is utilised, yet it must sometimes be wished for. The only special after-treatment required in my method is the removal of the sutures used in the "plastic" portion of the procedure—practically painless.

The statement that "sepsis later is almost certain to occur ..... and is, in fact, desirable," is not altogether pleasant reading; moreover, it presupposes that the scar left after healing by "second intention" is more capable of withstanding subsequent pressure than that of "primary union," which I do not believe or I would deliberately court sepsis every time I perform a radical cure of hernia or close up a laparotomy wound. If I remember rightly, a generation or more ago such a course was actually advocated in the operation for hernia (McBurney), and, less remotely, has been practised as part of the operation for nephropexy, but I was unaware that the principle had received any wide recognition. On the contrary, if there be one fact more firmly established than another in relation to operations for hernia or for any other condition where the scar has subsequently to withstand pressure I should have thought it to be that sepsis, with its consequent healing by granulation, is the most important factor predisposing to a yielding of the scar.

Mr. Lockhart-Mummery writes: "In principle a prolapse is similar to a hernia and requires the same conditions for its cure," but in the next seven lines it becomes evident that he misses the whole point of the analogy, obviously regarding the prolapse of the rectum as the "stretching of some part of the contained viscera"—i.e., as the equivalent of the *contents* of an ordinary hernia. This is not so. Prolapse of the rectum *is* a true hernia, of the pelvic floor, but the pelvic floor and rectum constitute the *coverings* and not the *contents* of the hernia; the analogue of the contents of the ordinary hernia is the omentum or small intestine which may occasionally occupy the prolongation of the pouch of Douglas, which accompanies, or rather *precedes* the descent of the rectum, which contents may, like the contents of other herniæ, become strangulated. The position of the rectum in relation to the hernia is exactly that of the cæcum or sigmoid colon in the so-called "sliding" hernia, or "hernie par glissement"—i.e., it is extra-saccular. Further, I fail to discover any of the alleged similarity in principle between Mr. Lockart-Mummery's operation and that for the radical cure of hernia. The *first*, and as many believe the *sole* essential of the latter, is a complete obliteration of the sac, which Mr. Lockhart-Mummery does not even attempt. The only operation with which I am acquainted which really does act on this principle is that described by Dr. A. V. Moschowitz,[2] in which, through a laparotomy wound, the entire pouch of Douglas is obliterated by successive tiers of circular suture. I have performed this operation on three occasions with only partial success, having had to supplement it by a plastic restoration of the anal canal. Anyone who has attempted Moschowitz's procedure will agree that, owing to the surprising depth of the pouch of Douglas in these cases, it is a difficult and severe operation, and not in any way comparable to the easy and safe method of paraffin-wax injection which I have described.

I am, Sir, yours faithfully

Manchester, Feb. 5th, 1921. ARTHUR H. BURGESS.

[1] THE LANCET, 1904, ii., 759.

PROPHYLAXIS IN VENEREAL DISEASE.

To the Editor of THE LANCET.

SIR,—I was pleased to read Mr. Kenneth M. Walker's letter in your last issue, suggesting that members of the two societies, the N.C.C.V.D. and the S.P.V.D., should arrange to meet. At an official interview with Sir Malcolm Morris last June I said I thought it was a pity that the two societies did not combine, as now their differences were those "twixt Tweedledum and Tweedledee." The N.C.C.V.D. considers that the recommendation of the washing with water and a well-known chemical—namely, soap (which is potassium or sodium stearate, palmitate, or oleate, &c., or a combination of these according to the fats used in its preparation) is not encouraging vice, but that it is encouraging vice for the S.P.V.D. to recommend the use of less common, but scientifically proved to be very efficient, chemicals—namely, water and potassium permanganate, or a 33 per cent. calomel ointment. Also the S.P.V.D. recommends that as the latter are less common, they should be made more easily available. The N.C.C.V.D., however, recommends the use of these disinfectants at so-called early treatment centres, which are really *delayed* disinfection centres. In addition to the great cost of such centres there are grave reasons rendering their provision by sanitary authorities impracticable.[3]

Mr. Walker states that the N.C.C.V.D. does not believe that the "packet" system would be effective when applied to the civil community. The S.P.V.D., however, recommends a much less costly system—namely, education by means of posters and leaflets placed in men's underground conveniences, and the latter is the system that was adopted by the Holborn Borough Council last year. 50,000 of the leaflets are supplied at a cost of about £19, that is, less than 1*d*. for 10. For æsthetic reasons also a man is much more likely to adopt *self*-disinfection than to go to a centre for disinfection by a skilled attendant. The S.P.V.D., while advocating that no moral measures should be neglected, recognises the plain unsavoury fact that a large proportion of the adult population (notwithstanding all these measures) has practised irregular sexual intercourse, and it therefore recommends the teaching of simple but efficient methods of self-disinfection as a practical means of the prevention of venereal diseases; also that the prevention of disease by all practicable means is the paramount duty of sanitary authorities.

The Holborn leaflet gives concise information—"What Every Man Should Know"—respecting the terrible ravages caused by these diseases; that the only safe, right, and manly course is to exercise self-control; that prevention is infinitely better than cure; and that it is therefore the bounden duty of any man who will indulge

[2] A paper read before the New York State Medical Society, April 16th, 1912, and published in Surgery, Gynæcology, and Obstetrics about that time.

[3] A solution of potassium permanganate, 1 in 1000, is also well known, as it was recommended by the Local Government Board and the Ministry of Health for the prevention of influenza.

in promiscuous sexual intercourse to adopt this disinfection in order to avoid disease, which he may pass on to innocent people. The poster has the same wording. On the back of the leaflet are simple directions respecting (1) immediate self-disinfection, (2) delayed self-disinfection, and the advice (3) if any symptoms of disease arise immediately to consult a doctor or attend one of the special clinics at a hospital. Posters respecting (3) are also exhibited.

Although any fairly intelligent youth or man can very easily carry out the simple directions, human machinery like other machinery is not fool-proof. Much venereal disease is the sequel of foolish indulgence in alcoholic beverages, and if a man will so render himself temporarily idiotic or imbecile he probably then would be unable to carry out efficiently direction (1), therefore the directions (2) and (3) are also given.

I am, Sir, yours faithfully,

Council Offices, High Holborn, Feb. 7th, 1921. W. A. BOND.

THE REGULATIONS FOR DANGEROUS DRUGS.

To the Editor of THE LANCET.

SIR,—I have been instructed by the Executive of the Portsmouth Division, B.M.A., to send to you the following resolution for insertion in THE LANCET :—

"We, the members of the executive of the Portsmouth Division of the British Medical Association, having read the proposed regulations for the sale of dangerous drugs, &c., emphatically protest against their application to medical men, as it is utterly impossible to carry them out; the result will be, either that the practitioner will be bound to ignore the regulations, or his patients will be deprived of valuable and anodyne drugs, and thereby their sufferings will go unalleviated."

It was further resolved that this resolution be sent to the Home Secretary, the local Members of Parliament, and the medical press.

I am, Sir, yours faithfully,

C. A. S. RIDOUT, F.R.C.S.,
Honorary Secretary, Portsmouth Division, B.M.A.

Southsea, Feb. 5th, 1921.

THE INDICATIONS FOR REMOVAL OF TONSILS.

To the Editor of THE LANCET.

SIR,—Most surgeons would agree with the conclusions arrived at by Mr. M. Vlasto in his interesting paper on tonsillectomy, which appeared in THE LANCET of Jan. 22nd; at the same time there are points made with which one may differ. He states that the dissection operation causes less trauma to the faucial pillars than the use of the guillotine. Following Dr. G. E. Waugh's paper in 1909 I made a practice of removing all tonsils in children and adults by the dissection method as a routine; about 1913 I learned of O'Malley's technique of enucleation by the reversed guillotine. I have no hesitation in stating my complete agreement with Dr. Dan McKenzie that "enucleation by the guillotine removes the whole of the tonsils yet spares the faucial pillars." My experience of both methods teaches me that the guillotine operation is much the better operation in the case of children, and will rarely fail to effect a complete enucleation if deliberately performed under good anæsthesia. There is no need for it to be a "messy" or "rushed" procedure if the coöperation of a skilled anæsthetist is obtained who is accustomed to work with the surgeon, and so controls the patient as to allow of deliberate swabbing and full inspection of the tonsillar beds. Although in hospital practice, owing to the large number of cases, the operation has perforce to be performed under ethyl chloride or gas and oxygen, these are not nearly so satisfactory as a chloroform and ether mixture. There is no operation in throat work in which a skilled anæsthetist can be of more assistance to the surgeon than in the one under consideration, by inducing the correct degree of anæsthesia, by the proper handling of the head, and by care of the mouth-gag.

In adults, on the other hand, I find that it is usually necessary to use the dissection method to effect complete enucleation, owing to the inflammatory adhesions about the capsule, but I regard this operation as much more formidable as regards risk of hæmorrhage and after-pain than the guillotine operations in children. I use the O'Malley guillotine and endeavour to follow the technique as described by him, and know of none safer or more satisfactory.

I am, Sir, yours faithfully,

Manchester, Feb. 7th, 1921. LINDLEY SEWELL.

THE HAND-MARKINGS OF MONGOLIAN IMBECILES.

To the Editor of THE LANCET.

SIR,—I shall be glad if you will allow me to insist, as I did in my recent paper read before the Medical Society of London, and reported in THE LANCET last week, that it was Dr. R. L. Langdon-Down, and not I, who originally described the peculiar hand-markings of Mongolian imbeciles. Dr. Langdon-Down's observation is one which has not merely clinical interest, but anthropological importance and theriomorphic significance. The latter is emphasised in Professor F. Wood Jones's recent work on the Hand, though the relation to "Mongolism" is not therein mentioned.

I am, Sir, yours faithfully,

Wimpole-street, W., Feb. 7th, 1921. F. G. CROOKSHANK.

THE INDUCTION OF ABORTION.

To the Editor of THE LANCET.

SIR,—The article by Sir John Phillips on this subject in THE LANCET of Feb. 5th opens up a question of great importance. My own experience leads me to believe that the necessity for the induction of abortion very rarely arises. Holding the offices successively of resident obstetric officer, house surgeon, and house physician at St. Mary's Hospital, and working under such well-known men as Alfred Meadows, Braxton Hicks, Montagu Handfield-Jones, Edmund Owen, and William Broadbent, I never once saw the operation performed, and during 30 years of private family practice I have never seen a case in which it was necessary.

Sir John Phillips enumerates a number of conditions under which he considers the operation justifiable or necessary, and I hope that others will comment upon his paper, so that some more definite ruling may be arrived at as to the circumstances under which the induction of abortion becomes a necessity. The operation is repugnant to the conscientious practitioner, and yet one has the feeling that it is sometimes lightly undertaken. That it is a proceeding fraught with very real danger to the patient, and far from easy to perform, there can be little doubt, and that it should never be undertaken without previous consultation, if possible with a gynæcological specialist, I venture to think should be an invariable rule.

I am, Sir, yours faithfully,

Sussex-gardens, W., Feb. 7th, 1921. E. M. CALLENDER.

PART-TIME OR WHOLE-TIME FOR THE M.O.H. AND S.M.O.

To the Editor of THE LANCET.

SIR,—The four writers in THE LANCET of last week upon my letter in the previous issue do not appear to have studied the report of the Consultative Council to which I have referred. Dr. I. D. Suttie, however, accepts in some degree the situation in the right light. Dr. G. W. Fleming, Dr. J. H. Gellatly, and Dr. T. Chetwood seem to be personally aggrieved and to be attempting to justify their positions. These three should most carefully study the report, when they must come to the only conclusion that is to be arrived at—viz., the present service of school medical officers is far from satisfactory. Otherwise, why are such radical changes advocated after 12 years? And this is the crux of the question.

I am, Sir, yours faithfully,

Chichester, Feb. 5th, 1921. A. M. BARFORD.

NITROUS OXIDE AND OXYGEN IN OBSTETRICS.

To the Editor of THE LANCET.

SIR,—Your annotation in THE LANCET of Jan. 15th with reference to the publication of the American Anæsthetic Research Association on the above subject is of interest, in that it emphasises the value attached in America to this method of rendering less painful the bearing of children. Native women, especially those of strong muscular development due to agricultural labour, can usually deliver themselves without much trouble; a Fijian once told me that for the women of her race it was "not much more exertion to bring a baby into the world than to defæcate." With us, unfortunately, labour is frequently pathological and pain is indeed real; its effects on the subsequent health of the mother may be as far-reaching as pain from any other source; hence "twilight sleep" and many other attempts directed towards its mitigation. As demonstrated in your article nitrous oxide analgesia has given satisfaction in the United States. It is popular there—and why not here also? I believe the accouchement position is the same in the two countries; gas can surely be given with absolute safety with the patient on her side in the knee-elbow position. The advantages claimed for nitrous oxide oxygen and nitrous oxide and air are that they permit the patient to bear down without pain or entire loss of consciousness; the gases either prevent painful stimuli from reaching the brain, or greatly reduce their intensity. Between the pains the patient is fully conscious and if desired can even walk about the room. The ideal method is, as you remark, for the administration to be done by an anæsthetist, using such an apparatus as the Teter, Gwathmey,[1] Geoffrey Marshall,[2] or the one described by the present writer.[3] For its portability and absence of fine adjustment valves the Marshall is without doubt the best, although a method of warming the gases would be an advantage.

The expense and difficulty of obtaining the services of an anæsthetist, perhaps for many hours, suggests the value of an apparatus, as used in America, with which the patient may administer the gases to herself, in the presence, of course, of the obstetrician. For this gas and air are the simplest means; what is necessary is enough nitrous oxide to control pain, together with sufficient oxygen or air to maintain adequate tissue respiration. About 10 per cent. to 15 per cent. air or 5 per cent. to 15 per cent. oxygen is needed, the amount varying with individual patients. Re-breathing warms the gases and is economical, but cannot, of course, be employed for self-administration. For this purpose a Colman gas valve is set so as to admit the minimum amount of air that will obviate cyanosis. With those who can and will facilitate nasal breathing a nose-piece may be employed, and pure nitrous oxide is then permissible; otherwise a Barth face-piece is used. When a pain comes on the woman places the mask over her face or adjusts the nose-piece, as the case may be; the handle of the apparatus, which will subsequently be described, is compressed; the patient breathes the gases and is eased of her pain when analgesia is established, but before the onset of anæsthesia she loses power to control the handle; the gases are automatically cut off, and readmitted when the handle is operated on return of pain.

The earlier pain of labour is certainly thus relieved, and exhaustion and shock prevented, without any danger to mother and baby. Complete deadening of pain may not always be obtained during the expulsion stage; for this, surgical anæsthesia with one of the apparatuses named, and the presence of an anæsthetist, are often required.

In designing a self-administration apparatus simplicity and precaution against any possible accident are the main considerations. If a gas-bag is employed the patient can cut off the gas-supply to herself, but not the supply to the bag; unless the obstetrician can turn the latter off at the cylinder the bag may burst and terrify the patient. To prevent this possibility a governor is fitted to the cylinder instead of a bag; when the patient releases the handle the gas is cut off at the source.

You have pointed out the desirability of some details of such an appliance, and I suggest that the latter need merely consist of a 200 gallon gas cylinder with a governor, tubing to connect the latter to the hand-piece, a nasal-piece, and a face-piece with a three-way valve. The hand-piece consists of a ½-inch brass tube, perforated at right angles by a double metal tube, the inner tube of which is attached to a handle and kept extended by a spring; the tubes are fitted with ports, so placed that unless the handle is compressed they are not in line and the gas cannot pass. About 100 gallons of gas should last fully over an hour; two or three cylinders should be enough for an average case. Grudel[4] reports cases in which it has been administered for ten hours.

I am, Sir, yours faithfully,

CHARLES T. W. HIRSCH,

Anæsthetist, Samaritan, National Dental Hospitals, &c.

Jan. 25th, 1921.

[1] Described in THE LANCET, 1916, ii., 607.
[2] Trans. Royal Soc. Med., Dec., 1919.
[3] THE LANCET, 1918, ii., 48.

[4] Nitrous Oxide in Obstetrics, American Year Book of Anæsthetics, New York, 1916.

MEDICAL PROVIDENT SCHEMES.

To the Editor of THE LANCET.

SIR,—In THE LANCET of to-day's date Mr. Charles A. Parker outlines a scheme for a Coöperative Polyclinic. Under this scheme a single man, with an income of £300, is to obtain his doctoring, medical and surgical, for an annual premium of £1 15*s*. No differentiation appears to be made between an earned income and an income derived from invested capital. An income of £300, if derived from investments, implies a capital of £6000.

Is it intended to supply the possessor of £6000 with medical and surgical treatment for a yearly premium of 35*s*.? If this is not the intention, what is there in the scheme, as outlined, to prevent such an occurrence?

I am, Sir, yours faithfully,

Plymouth, Feb. 5th, 1921. C. HAMILTON WHITEFORD.

BOOKS, ETC., RECEIVED.

BELL, G., AND SONS, LTD., London.
The Child's Path to Freedom. By N. MacMunn, B.A. Pp. 163. 2*s*. 6*d*.

BLACK, A. AND C., London.
General Practice and X Rays. By A. V. Knox, M.B. With chapters on the Production of X Rays and Instrumentation by R. Knox, M.D. Pp. 214. 16*s*.

HEINEMANN, WILLIAM, London.
The Story of the Horton (County of London) War Hospital, Epsom: Its Inception and Work and Some Reflections. By Lieut.-Col. J. R. Lord, C.B.E., M.B. Pp. 264. 12*s*. 6*d*.

KEGAN PAUL, TRENCH, TRUBNER, AND CO., London.
The Autobiography of a Child, written from the Psycho-Sexual Point of View, for Doctors, Parents, Teachers, and Psychologists. Pp. 389. 12*s*.

LONGMANS, GREEN, AND CO., London.
An Introduction to the Chemistry of Plant Products. Vol. I., On the Nature and Significance of the Common Organic Compounds of Plants. By P. Haas, D.Sc., and T. G. Hill, A.R.C.S. 3rd ed. Pp. 414. 16*s*.

OLIVER AND BOYD, Edinburgh.
Transactions of the Edinburgh Obstetrical Society, 1919-1920. Vol. XL. Pp. 147.

WILSON, EFFINGHAM, AND STEPHENS AND SONS, London.
Excess Profits Duty and Corporation Profit Tax. By J. Gault. Pp. 190. 16*s*.

YEAR BOOK PRESS, THE, Chicago.
Practical Medicine Series. Edited by C. L. Mix, M.D. Vol. II., General Surgery, edited by A. J. Ochsner, M.D. Pp. 620. $2.50. Vol. III., The Eye, Ear, Nose and Throat, edited by C. A. Wood, M.D., A. H. Andrews, M.D., and G. M. Shambaugh, M.D. Pp. 382. $1.75. Vol. IV., Pediatrics, edited by I. A. Abt, M.D., and A. Levinson, M.D.; Orthopedic Surgery, edited by E. W. Ryerson, M.D., and R. O. Ritter, M.D. Pp. 256. $1.75.

LEAUCHOIL HOSPITAL, FORRES.—The annual general meeting of the governors of this hospital was held recently, Colonel Norman MacLeod, the chairman, presiding. The report showed that the funds on Dec. 31st, 1919, amounted to £17,749. During the year 1920 £1412 had been received, and after all expenditure had been met there was a balance at Dec. 31st, 1920, of £16,688 0*s*. 11*d*. The managers have realised part of their investments to meet the deficiency in the annual income.

Medical News.

UNIVERSITY OF SHEFFIELD.—**The results of the** December examinations in the Faculty of Medicine of this University are as follows:—

Diploma in Public Health.—W. J. Fordham, G. G. Marshall.
Third M.B., Ch.B.—Annie D. Sykes.

UNIVERSITY OF LONDON.—**A lecture on the Innervation of Striped Muscle Fibres and Langley's Receptive Substance, will be given at the Royal Society of Medicine, 1, Wimpole-street, London, W., by Dr. J. Boeke, Professor of Embryology and Histology in the University of Utrecht, at 5 P.M., on Feb. 16th. Professor W. M. Bayliss, F.R.S., will preside at this lecture, which will be delivered in English, and will be addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.**—*University College:* **A Chair of Embryology is to be founded at this College, to which an appointment will shortly be made at a salary of £1000. Dr. Charles Singer has been appointed to a Readership in the History of Medicine tenable at this College.**

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—**An ordinary Comitia of the College was held on Feb. 3rd, Sir Norman Moore, the President, being in the chair.—Licences to practise physic were granted to 83 candidates who had conformed to the by-laws and regulations and passed the required examinations.—A letter was received from the secretary of the Voluntary Hospitals Committee, formed by the Ministry of Health to inquire into the financial position of the voluntary hospitals, inviting the College to send representatives to give evidence. A reply was sent, emphasising the importance of the voluntary principle in relation to the interests of the sick, medical education, and the advancement of medical knowledge. The President and Censor were nominated to represent the College if any information were desired on these points.—A report from the Committee of Management concerning the Conjoint Examination in Midwifery and Diseases of Women was received and discussed. It was referred back to the committee for further consideration and report.**

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—**Arris and Gale lectures will be delivered as follows: The Function of the Kidneys in Enlargement of the Prostate Gland, by Mr. J. F. Dobson, M.S., on Friday, Feb. 18th, at 5 P.M.; the Azygos System of Veins in their Association with Surgical Affections, by Professor J. Howell Evans, M.Ch., on Monday, Feb. 21st, at 5 P.M.**

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—**As the result of the Final Examination held from Jan. 11th to 28th, the following candidates were approved in the subjects indicated, but are not eligible for diplomas:—**

Medicine.—Dulcie Stapleton Adkins, Royal Free; S. Almond, Manchester; G. Armitage, Leeds; H. K. Attaculagh, Royal Free; F. Back, St. Thomas's; E. T. Bailey, Middlesex; May Tilney Bassett, Sheffield; K. M. Bharucha, Bombay and London; H. W. Briggs, Cambridge and St. Thomas's; Marion Constance Vera Clarke, Royal Free; G. R. H. Cooper, Birmingham; P. G. Cumming, Manchester; Edith Margery Pearce Davies, Royal Free; J. R. Dow, Charing Cross; C. F. T. East, Oxford and King's Coll.; Kendwen St. Valentine Edwards, Univ. Coll.; A. Epstein, Birmingham; Olive Gwendolin Fisk, Cambridge and London; Janet Katherine Gatty, Univ. Coll.; Nellie Gray, Westminster; J. B. Gregor, Guy's; S. E. Harvey, St. Thomas's; W. E. Hayes, Oxford and St. Bart.'s; I. Hipshon, Leeds; J. Hollings, London; C. A. Horder, Cambridge and St. Bart.'s; R. W. P. Hosford, St. Bart.'s; Margaret Olwen Howell and M. Jayakar, Univ. Coll.; B. L. Jeaffreson and L. M. Jennings, St. Bart.'s; J. G. L. Jones, Liverpool; E. J. L. Jones-Evans, St. Thomas's; G. Kinneir, St. Bart.'s; Bessie Levin, Univ. Coll.; C. G. Lewis, Birmingham and Univ. Coll.; E. O. Lewis, Cambridge and Univ. Coll.; J. S. Lewis, St. Mary's; J. R. Lund, Cambridge and St. Thomas's; C. H. Macklin, Middlesex; D. McNair, Royal Free; S. E. J. Miedema, Amsterdam; J. C. R. Morgan, Westminster; L. S. Morgan, St. Bart.'s; B. S. Nisse, London; M. M. Ostrowick, Edinburgh; W. A. Owen, London; R. J. Parry, Univ. Coll.; Cassia Ethel Pratt, Royal Free; W. S. Ratnavale, Calcutta and London; L. M. Rice, Toronto; Edith Marjorie Rooke, Royal Free; T. S. Severs, Durham; L. Smalley, St. Thomas's; Y. A. Sumbul, St. Mary's; H. W. Taylor, Manchester; C. P. Thomas, Westminster; E. W. C. Thomas, St. Bart.'s; A. W. Tibbetts, Birmingham; J. C. Twomey, Liverpool; C. Verheyden, Edinburgh and Univ. Coll.; H. S. Ward, Leeds; L. K. Watson, Guy's; R. A. Webb, Johns Hopkins, Baltimore; and C. F. Young, London.

Midwifery.—Charlotte Katherine Jocelyn Almond, King's Coll.; S. Almond, Manchester; G. Armitage, Leeds; F. Back, St. Thomas's; May Tilney Bassett, Sheffield and Charing Cross; F. Beshara, Univ. Coll.; F. A. Bryning, King's Coll.; E. M. Burrell, Cambridge and St. Thomas's; H. S. Chadwick, Manchester; L. E. Claremont, Univ. Coll.; Marion Constance Vera Clarke, Royal Free; P. G. Cumming, Manchester; C. B. Dansie, King's Coll.; H. S. Davies, St. Thomas's; Muriel Alice Mary Davies, King's Coll. and St. George's; A. de Souza, Middlesex; S. Douglas and Kendwen St. Valentine Edwards, Univ. Coll.; A. H. El Ramli, Liverpool; J. C. Evans, London; L. Farris, Westminster; Emmie Dorothy Fenwick, St. Mary's; Olive Gwendolin Fisk, Cambridge and London; Betty Fletcher, Royal Free and St. Mary's; M. R. Flynn, Sydney; G. H. Froggatt, Sheffield; Katherine Mary Lovell Gamgee and A. J. Gardham, Univ. Coll.; J. E. Gaze and R. Goodman, Charing Cross; A. H. Hall, Birmingham and London; M. Hall and E. Hardy, Guy's; A. D. Hepburn, Westminster; R. J. Hodgkinson, Guy's; C. A. Horder, Cambridge and St Bart.'s; Margaret Olwen Howell, Univ. Coll.; D. J. Jones, Westminster; D. M. Jones, Univ. Coll.; Margaret Gray Jones, Royal Free; A. H. Kassem, Guy's; J. Kindness, Charing Cross; R. C. Lightwood, King's Coll.; C. G. Lingford, Middlesex; I. B. McCann, Guy's; J. F. C. McColl, Liverpool; A. G. Mackay, Edinburgh; D. McNair, Royal Free; Y. Maximos, Middlesex; Rose Moss, Charing Cross; B. S. Nisse, London; T. S. North, St. Mary's; H. A. Osborn, King's Coll.; R. E. Overton and R. J. Parry, Univ. Coll.; L. P. Phillips and F. A. Pickworth, Charing Cross; Marjorie Pierce and Cassia Ethel Pratt, Royal Free; P. R. Rashbrook, London; T. R. Rees, Cardiff and St. Bart.'s; L. M. Rice, Toronto; G. H. Roberts, Charing Cross; A. Robertson, Guy's; Edith Marjorie Rooke and Margaret Charlotte Scrace, Royal Free; J. Seelenfreund, London; H. Shannon, St. Bart. s; Creina Shepherd, Calcutta and King's Coll.; A. E. Slater, Cambridge and St. Thomas's; H. K. Snell, King's Coll.; A. D. Soares, Bombay; Dorothy Mary Stewart, Royal Free and St. Mary's; A. E. Strawbaun, Guy's; B. H. Stribling, London; Lucy Maud Summerhayes, St. George's; H. R. J. Thomas and D. D. C. Thomson, London; A. W. Tibbetts, Birmingham; F. H. W. Tozer, London; C. Verheyden, Edinburgh and Univ. Coll.; H. S. Ward, Leeds; E. H. Weatherall, St. Bart.'s; L. R. A. Wells, Guy's; H. L. Willey, Cambridge and St. Thomas's; E. C. A. Wilson, Howard; and E. T. Wright, St. Mary's.

Surgery.—Dulcie Stapleton Adkins, Royal Free; F. G. L. Barnes, St. Bart.'s; E. C. Curwen, Cambridge and St. Thomas's; G. W. Elkington, Guy's; S. Farris, Cairo and Liverpool; A. J. Gardham, Univ. Coll.; Nellie Gray, Westminster; Marjorie Pearl Christine Greene, Royal Free; B. J. Hallowes, St. Bart.'s; C. B. Hawthorne, Cambridge and Birmingham; S. S. Hewitt, St. Mary's; R. W. P. Hosford and D. E. Jones, St. Bart.'s; J. T. Jones, Guy's; M. Kamil and R. Lee Michell, Middlesex; W. B. A. Lewis, Cambridge and St. Bart.'s; A. G. Mackay, Edinburgh; S. E. J. Miedema, Amsterdam; G. B. Oliva, Liverpool; F. A. Phillipps, Cambridge and St. Thomas's; K. P. Raman Pillay, Madras and London; J. G. Reed, St. Thomas's; A. M. Reid, Liverpool; J. Reith, Univ. Coll.; E. Savage, St. Bart.'s; H. E. Suter, St. Mary's; T. S. Severs, Durham; H. W. Taylor, Manchester; J. P. Traylen, London; W. J. G. Walker, Univ. Coll.; and L. S. Woolf, St. Mary's.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—**Dr. T. Gillman Moorhead has been elected to the King's Professorship of Materia Medica in succession to Dr. W. G. Smith, who resigned last November.**

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH: PARKIN PRIZE.—**The subject of the essay for the present period is, in terms of the deed: On the Effects of Volcanic Action in the Production of Epidemic Diseases in the Animal and in the Vegetable Creation, and in the Production of Hurricanes and Abnormal Atmospherical Vicissitudes. The prize, which is of the value of £100, is open to competitors of all nations. Essays intended for competition, written in English, should reach the secretary not later than Dec. 31st, 1921.**

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—**The following candidates have passed the Triple Qualification Examinations:—**

THIRD EXAMINATION.

Herbert W. Amyes, Tarabai Kelarkar, Catherine Millar, Rachel Caplan, Irene Ward, Herman S. N. Menko, William Leo Murray, George H. Dobbin, Thomas John Muir, and Thomas T. Hoskins.

Pathology.—**Charles W. de Villiero Pritchard and Albert Rudolf Rellum.**

Materia Medica.—**Ella Doris Messenger, Oliver H. D. Oliver, Akinlawon Adefolu, John Murray Cockburn, and Israel Rowstowsky.**

FINAL EXAMINATION.

Richard Arthur Cooper, Frederick James Duncan Cass, Gabriel Jonas Downona Hammond, George John Murray, Jack Shulman, James Hugh Wilson, Arthur Cuthbertson, Mayberry Hugh Carleton, Henry Godfrey Fitz-Maurice, Alexander Forsyth Caddell, Parasuma Parthasarathy, Walter Granville Carew, Joseph Black, Alexander Tirumlaiya, Patabendi Martin Fernando, and John Bertram van Cuylenburg.

Medicine and Surgery.—**Don James Hector Ferdinando.**

Medicine and Midwifery.—**Pauline Figdor, Reginald Edward Hopton, and John Bernard O'Neill.**

Medicine.—**Herbert Brown, Leo Hugo Peries, and Gwilym ap V. Jones.**

Surgery.—**John Murray.**

Midwifery.—**James Sydney Alex. Rogers and John Joseph M'Donald.**

Medical Jurisprudence and Public Health.—**W. A. M'K. Gibson, J. H. Dobbin, C. T. Williams, Marguerite M. I. Swanson, Peter J. B. Dyce, James Readdie, R. E. O'Keeffe, P. E. Malloch, Marjory J. A. Ogilvie, Alex. G. Thom, Arthur R. Lambie, Tarbai Kelarkar, Daniel R. Cilliers, J. A. H. Dykes, Edward James Sykes, and Thomas Francis Kelly.**

HARVEIAN SOCIETY.—A meeting of this society will be held at the Town Hall, Harrow-road, Paddington, on Thursday, Feb. 17th, at 8.30 P.M., when a paper will be read by Dr. W. Brown on Psycho-analysis.

RONTGEN SOCIETY.—A general meeting of this society will be held on Feb. 17th, at 8.15 P.M., in the Physics Lecture Theatre, University College, Gower-street, London, W.C., when a paper on Intensifying Screens and Secondary Radiation will be read by Mr. N. E. Luboshey.

VERMIN REPRESSION SOCIETY.—A successful dinner was held at the Connaught Rooms, London, on Feb. 8th, Sir Bruce Bruce-Porter presiding. Various speakers called effective attention to the economic and hygienic losses arising from rats and other animal pests when left unchecked. The formation of official rat offices in every town was advocated.

SOCIETY OF SUPERINTENDENTS OF TUBERCULOSIS INSTITUTIONS.—A meeting of this society will be held at 122, Harley-street, London, W., on Feb. 14th, at 4 P.M., when the main business will be the consideration of reports by committees on the coördination of statistics, the training of nurses, and the standards of medical and nursing staffs in institutions for the treatment of tuberculosis.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next quarterly meeting of this association will take place on Feb. 24th, at 11, Chandos-street, Cavendish-square, London, W., at 2.45 P.M., Dr. W. F. Menzies in the chair. Sir Frederick Mott, F.R.S., in conjunction with Dr. Hayao, will read a paper on the Pathology of Dementia Præcox, especially in Relation to the Condition of the Ovaries.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The Association is arranging for the International Union Against Tuberculosis (Paris) to be held in London from July 26th-28th. All countries which have joined the League of Nations, as well as the U.S.A., are represented on the Union, and delegates from about 25 different countries are expected to attend and to take part in the proceedings. Professor J. Calmette will open a discussion on the Modes of Diffusion of Tuberculosis Throughout the Races of the World, and three public addresses will be given by a Frenchman, an American, and an Englishman respectively. Visits to tuberculosis hospitals, sanatoriums, laboratories, and other institutions will be arranged.

OXFORD OPHTHALMOLOGICAL CONGRESS.—This Congress will assemble at Keble College, Oxford, on July 6th next, and the meeting will be held on July 7th and 8th. On the 7th a discussion on the Causes of Infection After Extraction of Senile Cataract will be opened by Dr. Victor Morax, of Paris. The Doyne memorial lecture will be delivered on the 8th by Mr. Ernest E. Maddox on Heterophoria. Members intending to take part in the discussion or desiring to contribute papers, pathological specimens, new operations, and so forth, are requested to send in their names as soon as possible to the honorary secretary, Mr. Bernard Cridland, at Salisbury House, Wolverhampton.

RETIREMENT OF PROFESSOR C. LLOYD MORGAN.—Professor Lloyd Morgan, formerly teacher in biology at the Bristol Medical School, is being entertained by the Association of Alumni of the University on Feb. 17th, on the occasion of his retirement from the professorship of psychology. The Chancellor of the university, Lord Haldane, will preside, and tickets (price 12*s.* 6*d.*) may be had on application to Mr. P. Haworth at the university. Although Professor Lloyd Morgan has not for some years now been teaching medical students he has retained an active interest in their work and welfare.

STUDENTS' MEDICAL SOCIETIES.—The following meetings are announced before the end of the winter session:—

St. George's Hospital Clinical Society.—The next meeting will be held on Feb. 17th, when Dr. R. Donaldson will read a paper on Influenza. On March 3rd, the last meeting, Dr. H. C. H. Bull will read a paper. All meetings are held at 8.30 P.M.

Guy's Hospital Pupils' Physical Society.—The next meeting will be on Feb. 17th, when demonstrations of pathological specimens and other communications will be given. On March 2nd there will be a clinical meeting, and on March 16th a paper will be read by Mr. C. H. Laver.

St. Thomas's Hospital Medical and Physical Society.—The next meeting will be held on Feb. 24th, when a paper on the Essentials of Success in Private Practice will be read by Sir Robert Fox-Symons. On March 10th Sir Archibald Reid will speak on Opaque Meals in the Diagnosis of Abdominal Disease. The meetings are held at 8.30 P.M.

ENCEPHALITIS LETHARGICA.—Twenty-nine cases were notified in London during the week ending Jan. 29th. Of these 5 occurred in Lambeth, 4 in Hackney, and 4 in Lewisham. The other cases notified were from Woolwich (3), Wandsworth and Shoreditch (2 each), and Battersea, Bethnal Green, Bermondsey, Camberwell, Finsbury, Hampstead, Poplar, Stepney, and Southwark (1 each).

PRESENTATIONS TO MEDICAL MEN.—On his retirement from the office of Principal of Grant Medical College, Bombay, Lieutenant-Colonel Ashton Smith was presented with a farewell address by past and present students at a representative gathering presided over by Major-General W. E. Jennings, K.H.P., Surgeon-General to the Government of Bombay. At the same meeting a portrait was unveiled of General Jennings, which has been presented to the College by his numerous admirers. General Jennings has served in Bombay for nearly all his service, and has taken a very prominent part in the public life of the city.—On his appointment as consulting physician to the National Hospital for Diseases of the Heart, to which hospital he has been a physician for 23 years, Dr. C. Chapman Gibbes was presented by his colleagues on the staff with a silver salver as a token of appreciation. The out-patients also presented him with a silver salver, with a letter expressing great regret at his retirement, and a further presentation has been made to Mrs. Chapman Gibbes of a handsome bowl and stand.—Dr. G. S. Trail, who has recently retired from practice after 43 years' service in Strichen, was on Jan. 19th given a silver salver suitably inscribed and a cheque for £130 by 493 friends and neighbours in the local town hall.

CONGRESS OF RADIOLOGY AND PHYSIOTHERAPY.—A Congress organised by the Electro-Therapeutic Section of the Royal Society of Medicine and the British Association of Radiology and Physiotherapy will be held this year in London on April 14th, 15th, and 16th. The President will be Sir Humphry Rolleston, supported by a long and distinguished list of Vice-Presidents. The secretary-general is Dr. G. Harrison Orton; the honorary secretaries for General Correspondence are Dr. Stanley Melville and Dr. Justina Wilson; and the honorary secretaries for Sections are Radiology, Dr. N. S. Finzi; Electrology, Dr. G. Murray Levick; and Physiotherapy, Dr. C. V. MacKay. The provisional programme is as follows: On April 14th, at 10 A.M., the congress will be opened at the Royal Society of Medicine. At 11 A.M. the Section of Radiology will discuss Diseases of Bone; the Section of Electrology, the Action of the Direct (constant) Current on the Tissues in Health and Disease; and to the Section of Physiotherapy, addresses on Physical Training and on the Chartered Society of Massage and Medical Gymnastics will be given. In the afternoon the Section of Radiology will meet at St. Bartholomew's Hospital, where papers and a demonstration on the Intra-peritoneal Injection of Oxygen will be given, and the radiographic departments of selected hospitals will be visited. Members of the Section of Electrology will visit the electrical departments of selected hospitals, while the Section of Physiotherapy will discuss the Treatment of Cardiac Disorders by Physical Means. In the morning of Friday, April 15th, the Section of Radiology will discuss the Normal Stomach; the Section of Electrology, the Uses of Electrical Methods in the Diagnosis and Prognosis of Paralysis; and the Section of Physiotherapy, Physical Treatment as an Aid to Orthopædic Surgery. In the afternoon the Section of Radiology will proceed to the consideration of the Abnormal Stomach, while the other two sections will hold a joint meeting to discuss Re-education of Muscles. On Saturday, April 16th, the Section of Radiology will discuss Deep Therapy and Radium Therapy; the Section of Electrology will deal with the subject of the Physiological Action and Therapeutic Uses of High-frequency Currents; and the Section of Physiotherapy with Backache and Referred Pain. Those who have already promised to contribute the opening papers at certain of the sessions include Dr. S. G. Scott, Dr. Wybauw, Dr. A. E. Barclay, Dr. Kouindjy, Dr. Finzi, and Dr. J. E. A. Lynham. It is hoped that in each section there will be three opening papers in each subject—one from France, one from Belgium, and one from England, each limited to 20 minutes, and followed by a discussion, limited to 10 minutes for each speaker. All communications may be made in French or English. A résumé of all opening papers should reach the secretaries not later than three weeks before the opening of the Congress, and should be addressed to the Royal Society of Medicine. Associated with the Congress will be an exhibition of X ray and electrical apparatus, and a demonstration of physical training, organised by the Ling Association, at the Royal Albert Hall on Saturday, April 16th, at 2.30 P.M. The subscription for English members is £2 2*s.*, for French and Belgian members Fr.40. Application for membership should be sent with the subscription to the honorary treasurer, Dr. J. Metcalfe, Royal Society of Medicine, 1, Wimpole-street, London, W. 1, as early as possible.

Colonel S. Lyle Cummins has vacated the post of professor of pathology at the Royal Army Medical College, London, and has assumed duty as Professor of Tuberculosis at University College, Cardiff.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON).—A course of 12 lecture-demonstrations on Gonorrhœa will be given by Mr. E. R. T. Clarkson and Mr. Malcolm Simpson (chief assistants to the genito-urinary department of the hospital) on Tuesdays, Wednesdays, Thursdays, and Fridays, at 4.30 P.M., in the venereal out-patient department, beginning Tuesday, March 1st. Members of the medical profession are invited to attend.

MIDDLESEX HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—Two Emeritus lectures will be delivered in the new theatre of the school on Tuesday, Feb. 22nd, and Friday, Feb. 25th, at 3 P.M. On Tuesday Sir Alfred Pearce Gould takes as his subject "Surgery: a Progressive Science—the Latest Word is Not the Last Word." On Friday Sir Richard Douglas Powell will lecture on "The Ætiology of Phthisis." Visitors are cordially invited.

MANCHESTER'S ANTIVENEREAL POSTER.—Reference has already been made in THE LANCET (1920, ii., 813) to a poster on prevention of venereal diseases affixed in the public lavatories in Manchester. This poster was withdrawn and a new poster which the health committee proposed to issue was considered at a meeting of the city council held on Feb. 2nd, with the result that certain clauses therein were ordered to be deleted by a majority of 4 to 1. Strong objection was taken to certain clauses not only in the council but also by certain outside bodies. One of those complained of read: "Men who are determined to disregard their moral obligations should read the leaflet, 'Directions to Men,' which may be obtained by men on personal application to the Medical Officer of Health, 1, Mount-street, Manchester." The other clauses indicated the position of the centres for early treatment and emphasised the necessity of early action.

ALL-INDIA MEDICAL CONFERENCE.—**The fourth** session of the All-India Medical Conference was recently held, under the presidency of Dr. Maharaj Krishna Kapur, of Lahore. Over 100 delegates, representing all grades of the profession, attended. The chairman of the reception committee laid stress on the necessity for a reorganisation of the medical services in India and an improvement in medical education. He dwelt on the want of medical relief in the country districts, and expressed the hope that sanitation and medical aid would receive more attention from Government in the future than has hitherto been the case. The President in his address urged the need for better facilities for medical research and for post-graduate training. He emphasised the need for separating the military and civil medical services and the establishment of more hospitals and medical institutions.

DONATIONS AND BEQUESTS.—**Messrs. George and** Henry Wills have contributed a further £200,000 to finish the building extension of the University of Bristol, which is being erected entirely at their expense.—The Chelsea Hospital for Women has received towards the building of its Nurses' Home £100 from the executors of the late Mr. F. L. Harvey, also £25 from the trustees of the late Robert Williams Edwards Trust.—Under the will of the late Mr. William Morrice Ledingham, of Aberdeen, who died on Sept. 22nd last, leaving £186,000, the sum of between £80,000 and £100,000 will be divided into 17 shares, charitable institutions benefiting in the following proportions: Aberdeen Royal Infirmary, 4 shares; Royal Aberdeen Hospital for Sick Children, 2; Aberdeen District Nursing Association, 1; Newhills Convalescent Home, 1; Aberdeen Asylum for the Blind, 1; Aberdeen Ophthalmic Institute, 1; Aberdeen Dispensary, Maternity Hospital, and Vaccine Institute, 1; Morningfield Hospital, 1.—In aid of Sir James Taggart's Sick Children's Hospital Scheme the employees of Messrs. Mitchell and Rae, Newburgh and Ellon, have contributed four hours' wages, amounting to £58, and the firm have added another £58, making £116 altogether. The Aberdeen city tramwaymen have decided to contribute in the same proportion, and it is hoped that £100 may be obtained from this source. Up to date the town council departments have contributed nearly £210 towards the scheme. The gas-workers have agreed to contribute 1*s.* each weekly for six weeks.—By the will of the late Mr. W. R. Teage, of Devon and London, the testator, after bequeathing some £75,000 of his estate, which amounts to £80,757 gross value with net personalty of £78,487, to his family and others, bequeathed the residue of his property as follows: Ten-fortieths to the South Devon and East Cornwall Hospital, Plymouth; four-fortieths each to Dartmouth Cottage Hospital and King Edward's Hospital Fund; two-fortieths each to Guy's Hospital, London Hospital, Poplar Hospital, Royal National Life-Boat Institution, Boys' Home Industrial School, and Newport Market Army Training School for Boys; one-fortieth each to the Middlesex Hospital, the Cancer Investigation Department of the Middlesex Hospital, Royal London Ophthalmic Hospital, Devon and Cornwall Homœopathic Hospital, Devon and Cornwall Ear and Throat Hospital, Plymouth Eye Infirmary, Home for the Dying Poor, Pembridge-square, W., London City Mission, Fox Court Ragged School Mission, and the Charity Organisation Society.—Under the will of the late Mr. H. Ainsworth, of Johannesburg, £1000 are bequeathed to Dr. Barnardo's Homes, and £1000 to the feoffees of Cheetham Hospital, Manchester.—Dr. David Lloyd Roberts, of Manchester, who died on Sept. 27th, 1920, aged 86, has left a fortune of £125,677, the net personalty being £104,462. The chief bequests are £5000 to the Royal Society of Medicine; £5000 to St. Mary's Hospital, Manchester; £3000 to the Manchester Royal Infirmary; £3000 to the Royal College of Physicians, London; £3000 to the Medical Society of London; an additional £500 each to the above societies for an annual lecture on any subject of medical or scientific interest; £2000 to St. David's College, Lampeter; £2000 to the Board of Finance of the Diocese of Manchester in trust for St. David's Church in Lyne-road, Chorlton-on-Medlock. His mezzotints and his water colours, which are mainly of the early English school, ancient glass, and antique silver are left to the Corporation of Manchester for the Art Gallery. After certain other legacies have been deducted, the residue, about £70,000, is to go to University College at Bangor for general purposes.

Appointments.

MACKENZIE, E. A., M.B., Ch.B., D.P.H., has been appointed Assistant Tuberculosis Physician to the King Edward VII. Welsh National Memorial Association.

STUART, F. J., M.R.C.S. Eng., Medical Superintendent of the County Mental Hospital, Berry Wood, Northampton.

St. Thomas's Hospital: SQUIRES, F. V., M.R.C.S., L.R.C.P. Lond., WALKER, A. R., M.R.C.S., L.R.C.P. Lond., BACK, G. A., M.R.C.S., L.R.C.P. Lond., GRANGER, E. D., M.B., B.S. Lond., HAMILTON, C. K. J., M.B., B.Ch. Oxon., HOEY, J. T. S., M.B., B.Ch. Oxon., LIANG, P. T., B.Ch. Cantab., WHITELAW, A. D., M.R.C.S., L.R.C.P. Lond., Casualty Officers and Resident Anæsthetists; MAXWELL, L. B., M.R.C.S., L.R.C.P. Lond., HAWLEY, A. T., M.R.C.S., L.R.C.P. Lond., KENDALL, G. M., M.B. Cantab., CARDELL, J. D. M., M.R.C.S., L.R.C.P. Lond., Resident House Physicians: HOBBS, F. B., M.B., B.Ch. Cantab., Resident House Physician for Children; GARNETT, D. G., M.R.C.S., L.R.C.P. Lond., HALLIWELL, A. C., M.B., B.Ch. Cantab., LOW, W. A., M.R.C.S., L.R.C.P. Lond., SPENCE, D. B., M.R.C.S., L.R.C.P. Lond., Resident House Surgeons; FOLEY, W. B., M.B., B.S. Lond., Resident Orthopædic House Surgeon; MARRINER, H. I., M.R.C.S., L.R.C.P. Lond., Resident House Surgeon for Ear, Nose, and Throat; ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., House Surgeon to Block 8; MAITLAND, C. D., M.B., B.S. Lond., Senior Obstetric House Physician; ORME, E. S., M.R.C.S., L.R.C.P. Lond., Junior Obstetric House Physician; ROBERTS, E. D. T., M.R.C.S., L.R.C.P. Lond., Senior Ophthalmic House Surgeon; MCLEAN, C. F., M.R.C.S., L.R.C.P. Lond., Junior Ophthalmic House Surgeon; CAVENAGH, J. B., M.B., Ch.B. Oxon., WOOD, F. G., M.A., B.Ch. Cantab., HUMFREY, S. H. G., M.R.C.S., L.R.C.P. Lond., ROBINSON, R. H. O. B., M.B., B.Ch. Cantab., SHAW, J. A. P., M.R.C.S., L.R.C.P. Lond., SYMES, R. N. L., M.R.C.S., L.R.C.P. Lond., TRACY, G. D. C., M.R.C.S., L.R.C.P. Lond., TALLERMAN, K. H., M.R.C.S., L.R.C.P. Lond., SPOOR, A. T., M.R.C.S., L.R.C.P. Lond., SHIRES, B., M.B., Ch.B. Edin., BURNS, C. L. C., M.R.C.S., L.R.C.P. Lond., THOMAS, C. J., M.R.C.S., L.R.C.P Lond., PARSONS-SMITH, B. T., M.D. Lond., Clinical Assistants.

Certifying Surgeons under the Factory and Workshops Acts: KIRKHOPE, G., M.B., Ch.B. Glasg. (Dalmellington, Ayr); TERRY, L. H., M.R.C.S., L.R.C.P. Lond. (Fishguard); CHURCHOUSE, W. K., M.R.C.S., L.R.C.P. Lond. (Long Buckby); JACKSON, J., M.B., B.Ch. Dubl. (Marple).

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, 49/57, Vauxhall Bridge-road, S.W.—Res. H.S. £200.

Beckett Hospital, Barnsley.—Jun. H.S. £200.

Belgrave Hospital for Children, Clapham-road, S.W.—Asst. P. 50 gs.

Birmingham Orthopædic Centre, Highbury, Ufculme, Sorrento Hospitals.—Medical Superintendent. £800.

Bolingbroke Hospital, Wandsworth Common, S.W.—Res. M.O. £200.

Brighouse Borough.—M.O.H. and Sch. M.O. £650.

Bristol Royal Infirmary.—Hon. Med. Regist. Also H.S. for Ear, Nose, and Throat Dept. £120.

Burnley County Borough.—Female Asst. M.O.H. £500.

Cheshire County Council, Wrenbury Hall Colony.—Res. Med. Supt. £600.

Croydon General Hospital.—Second H.S. £150.

Dreadnought Hospital, Greenwich.—H.P. and H.S. £150.

Dundee Royal Infirmary.—Hon. Visiting S.

East Ham Education Committee.—Sch. Dentist. £450.

East Sussex County Council, Darwell Bank Sanatorium.—Med. Supt. £750.

Eccles and Patricroft Hospital.—Res. H.S. £200.

Evelina Hospital, Southwark, S.E.—H.P. £160. Also Hon. S. to Out-patients.

General Lying-in Hospital, York-road, Lambeth, S.E.—Asst. P.

Great Northern Central Hospital, Holloway, N.—P.

Great Yarmouth Hospital.—H.S. £250.
Hospital for Epilepsy and Paralysis and Other Diseases of the Nervous System, Maida Vale, W.—Res. M.O. £150.
Hospital for Women, Soho-square, W.—Hon. M.O.
Hull Royal Infirmary.—Asst. H.S. £150.
Infants Hospital, Vincent-square, Westminster.—P. Also Asst. P.
Kent County Mental Hospital, Chartham, near Canterbury.—Jun. Asst. (Third) M.O. £350.
Kent Education Committee.—Female Sch. Med. Inspec. £500.
Kingswood, Bristol, Cossham Memorial Hospital.—Visiting S.
Leicester Royal Infirmary.—H.S. £200.
Lincoln County Hospital.—Jun. H.S. £150.
London County Mental Hospitals.—Clin. Assts. £200.
London Lock Hospital, Dean-street, Soho, W.—H.S. £200. Also Registrar.
London Lock Hospital, Harrow-road, W.—H.S. £300.
London (Royal Free Hospital) School of Medicine for Women and Royal Free Hospital.—First and Second Assts. in Gynæc. and Obst. Unit. £700 and £500.
Macclesfield, Cheshire County Asylum, Parkside.—Asst. M.O. £350.
Manchester Royal Eye Hospital.—H.S. £120.
Manchester Royal Infirmary.—Path. Registrar. £350.
Metropolitan Hospital, Kingsland-road, E.—Asst. P.
Middlesex Hospital, W.—Res. Asst. Anæsth. £105.
National Hospital for the Paralysed and Epileptic, Queen-square, Bloomsbury, W.C.—Res. M.O. £200.
Newark Hospital and Dispensary.—Res. H.S. £200.
Newport, Mon., Education Committee.—Asst. Sch. M.O. and Med. Insp. of Schools. £600.
Newport, Mon., Royal Gwent Hospital.—H.S. £200.
Northampton, County Mental Hospital, Berry Wood.—Sen. Asst. M.O. £300. Also Jun. Asst. M.O. £210.
Northumberland County Asylum, Morpeth.—Asst. M.O. £400.
Peterborough General Infirmary.—H.S. £200.
Plymouth, South Devon and East Cornwall Hospital.—H.P. £175. Also Asst. S.
Queen Mary's Hospital for the East End, Stratford, E.—Hon. Ophth. S. Also H.S.
Queen's Hospital for Children, Hackney-road, Bethnal Green, E.—Asst. P.'s.
Royal Waterloo Hospital for Children & Women, S.E.—Cas. O. £150
St Peter's Hospital, Henrietta-street, Covent Garden, W.C.—Hon. M.O.
Sheffield Royal Hospital.—Res. Surg. O. £250.
Sheffield Royal Infirmary.—Asst. Cas. O. £150
Sidcup, Frognal Ministry of Pensions Hospital.—Jun. Res. M.O. £400.
Singapore, Straits Settlements.—Asst. Principal of Medical School. $600 per month.
Sunderland, Ministry of Pensions Hospital.—Jun. M.O. £350.
Sunderland Royal Infirmary.—Two Jun. H.S.'s. £200.
University College Hospital, Gower-street, W.C.—Res. M.O. £150.
Westminster Hospital.—Asst. H.S.
Wigan County Borough.—M.O.H. £850.
Winsley Sanatorium, near Bath.—Asst. Res. M.O. £250.
Wolverhampton and Staffordshire General Hospital.—Hon. Specialist.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at King's Cliffe, at Slamannan, and at Monmouth.

Births, Marriages, and Deaths.

BIRTHS.

CARNEGIE DICKSON.—On Jan. 31st, at Devonshire-street, W., the wife of W. E. Carnegie Dickson, M.D., F.R.C.P.E., Brunswick-place, Regent's Park, N.W., of a daughter.
DICKSON.—On Feb. 4th, the wife of Ian D. Dickson, M.D., Thorpe-road, Norwich, of a daughter.
EAGER.—On Feb. 6th, at Exminster, Devon, the wife of Richard Eager, O.B.E., M.D., of a son.
HALL.—On Jan. 9th, 1921, at 6, Dunluce Terrace, Belfast, the wife of Dr. Robin Hall, of a daughter.
LEE.—On Jan. 30th, at Cardigan-road, Headingley, Leeds, the wife of Harry Lee. F.R.C.S., of a daughter.

MARRIAGES.

HAVARD—HUMPHREY.—On Feb. 5th, at the Chapel Royal, Savoy, Arthur William Havard, M.B., B.S. Lond., late R.A.M.C., to Ursula Vernon, eldest daughter of Major and Mrs Vernon Humphrey, of Ridgmount-gardens, W.
NICHOL—WEIR.—On Jan. 18th, at Caledonian Hotel, Edinburgh, John MacRae Sandilands Nichol, M.B., Ch.B. Edin., to Dorothy, only daughter of Mr. and Mrs. John B. Weir, of 4, Salisbury-road, Edinburgh.
PAULIN—MILLIGAN.—On Feb. 2nd, at St. Paul's Church, Bedford, Dr. George Alexander Paulin, to Mary, daughter of the late Dr. and Mrs. Milligan, De Parys-avenue, Bedford, and Cranfield, Bedfordshire.

DEATHS.

FOSTER.—On Feb. 4th, at the Abbey, Thorpe-le-Soken, Essex, Dr. Francis Wheldale Foster, aged 61.
HARRIS.—On Feb. 5th, at Queen's-road, Southport, Robert Harris, M.B., J.P., aged 73 years.
MILNE.—On Feb. 3rd, at Nordrach-on-Dee, George Wardlaw Milne (late Lieutenant-Colonel, R.A.M.C., T.C.), aged 47.
SCOTT.—At "The Tower," Murrayfield, Edinburgh, on Feb. 2nd, Sarah Jeffrey, wife of Dr. Joseph Scott, Teheran, Persia.
STAPLE.—On Feb. 4th, at Lyme Regis, James Dibble Staple, M.R.C.S., L.S.A., formerly of Cheltenham-road, Bristol, in his 60th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Tuesday, Feb. 15th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for Election to the Fellowship. (Names already circulated.)

MEETINGS OF SECTIONS.

Monday, Feb. 14th.

WAR SECTION: at 5 P.M.
Exhibition and Demonstration of Splints and Similar Apparatus by Major Meurice Sinclair.
At 9 P.M.:
Major Meurice Sinclair will read a paper (with illustrative slides).
SECTION OF SURGERY: SUBSECTION OF ORTHOPÆDICS: Members of this Section and Subsection are cordially invited to attend the above meeting.

Tuesday, Feb. 15th.

SECTION OF THERAPEUTICS AND PHARMACOLOGY: at 4.30 P.M.
Papers:
Dr. J. H. Burn: Comparison of Digitalis Tinctures by Different Physiological Methods.
Dr. P. Hamill: Oral Administration of Pituitary Extract (Experimental).
Dr. Donaldson: Oral Administration of Pituitary Extract (Clinical).

SECTION OF PATHOLOGY: at 8.30 P.M.
Communications, &c.:
Dr. W. E. Gye and Dr. E. H. Kettle: Passive Immunity in Tetanus.
Dr. Mackenzie Wallis: Demonstration on Estimation of Sugar in the Blood.
Dr. A. E. Gow: A Specimen of Pancreatic Infarct and Fat Necrosis.
Dr. T. H. G. Shore: (1) Influenzal Meningitis of Spinal Cord; (2) Knee-joint in Hæmophilia; (3) Retrograde Metastases in Carcinoma.
Dr. E. H. Kettle: (1) A Congenital Sacral Teratoma; (2) A Primary Chancre of a Finger following Trauma.
Members desiring to read papers or show specimens are requested to communicate with Dr. E. H. Kettle, 35, Nottingham-place, W.1.

Wednesday, Feb. 16th.

SECTION OF HISTORY OF MEDICINE: at 5 P.M.
Mr. Robert Steele: The Introduction of Astrology into Western Medicine (Preliminary).
Sir D'Arcy Power: Some XVII. Century Statistical Tables of St. Bartholomew's and St. Thomas's Hospitals.
Dr. Haldin Davis: A Very Early Illustration of a Skin Disease.

Thursday, Feb. 17th.

SECTION OF DERMATOLOGY: at 5 P.M. (Cases at 4.30 P.M.)
Cases: The following will be shown by—
Dr. H. MacCormac: Darier's Disease (?).
Dr. J. L. Bunch: Boeck's Sarcoid.
Other cases will be shown.

Friday, Feb. 18th.

SECTION OF OTOLOGY: at 5 P.M. (Cases at 4.45 P.M.)
Paper:
Dr. A. R. Friel: Zinc Ionisation and Electrolysis in the Treatment of Chronic Otorrhœa.
Cases will be shown by—
Mr. Mollison, Dr. Hutchison, Mr. Cleminson, and Mr. Norman Patterson.

SECTION OF ELECTRO-THERAPEUTICS: at 8.30 P.M.
Social Evening:
Members are invited to communicate with the Hon. Secretary (Dr. Melville, 9, Chandos-street) if they wish to show skiagrams of unusual affections of bone, or to bring such for diagnosis.
There will be an informal discussion on questions of interest affecting the Section.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 14th.—8.30 P.M., Discussion on Skin Disease, its Relation to Internal Disorder, opened by Sir James Galloway. Followed by Dr. A. Hall, Dr E. W. Goodall, Dr. A. Whitfield, Dr. E. G. Little, Dr. H. W. Barber, Dr. H. G. Adamson, Dr. J. M. H. McLeod, Dr. H. MacCormac, Dr. R. Hutchinson.

LONDON DERMATOLOGICAL SOCIETY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 15th.—4.30 P.M., Pathological Specimens. Cases sent for Consultation. Clinical Cases will be shown by Dr. J. L. Bunch, Dr. W. Griffith, Dr. E. J. D Mitchell, Dr. S. R. Kapoor, Dr. W. K. Sibley, Dr. Eva White.

HUNTERIAN SOCIETY, at Sion College, Embankment, E.C.
WEDNESDAY, Feb. 16th.—9 P.M., Annual Oration:—Dr. H. H. Bashford: The Ideal Element in Medicine.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Feb 18th.—7.45 P.M., Microscopic Specimens. 8.15 P.M., Papers:—Lt.-Col. J. O. Kennedy, R.A.M.C.: Some Observations on the Pathology of Relapsing Fever.—Dr. A. M. Cole: Five Cases of Sasciolopsis Infection, with Remarks.—Dr. A. Connall: Results of the Examination of Chrysops for Filaria in West Africa.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

MONDAY, Feb. 14th.—4 P.M., Hunterian Oration: Sir Charters J. Symonds.

WEDNESDAY.—5 P.M., Arris and Gale Lecture:—Dr. F. W. Edridge-Green: The Cause and Prevention of Myopia.

FRIDAY.—5 P.M., Arris and Gale Lecture:—Mr. J. F. Dobson: The Function of the Kidneys in Enlargement of the Prostate Gland.

UNIVERSITY OF LONDON, at the Rooms of the Royal Society of Medicine, 1, Wimpole-street, W.

Advanced Lecture in Medicine to Students of the University and others interested in the subject.

WEDNESDAY, Feb. 16th.—5 P.M., Dr. J. Boeke: The Innervation of Striped Muscle Fibres and Langley's Receptive Substance.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Feb. 14th.—2 P.M., Dr. Simson: Diseases of Women. 2.30 P.M., Mr. Baldwin: Visit to Surgical Wards. Dr. A. Saunders: Demonstration of Medical Cases (Medical Wards). 5 P.M., Lecture:—Mr. B. Harman: Intestinal Sepsis and Irido-cyclitis.

TUESDAY.—12 noon, Mr. T. Gray: Demonstration of Fractures. 2 P.M., Dr. Burnford: Medical Out-patients. 2.30 P.M., Mr. Addison: Visit to Surgical Wards. 5 P.M., Lecture:—Dr. Morton: X Ray Appearances of Some Diseases of the Stomach.

WEDNESDAY.—10 A.M., Mr. MacDonald: Genito-Urinary Department. 2 P.M., Mr. Gibb: Eye Department. Mr. D. Armour: Demonstration of Surgical Cases (Surgical Wards). 5 P.M., Lecture:—Dr. Owen: Some Principles of Treatment in Gastric Disorders.

THURSDAY.—2 P.M., Dr. S. Pinchin: Medical Out-patients. Mr. D. Armour: Operations. Mr. Baldwin: Orthopædic Department. 5 P.M., Special Lecture:—Dr. I. Bruce: X Ray Diagnosis of Diseases of Joints (open to all medical practitioners).

FRIDAY.—10 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Skin Department. 5 P.M., Lecture:—Mr. Baldwin: Appendicitis.

SATURDAY.—10 A.M., Dr. A. Saunders: Medical Diseases of Children. 12 noon, Mr. Sinclair: Surgical Diseases of the Abdomen. 2 P.M., Dr. Owen. Medical Out-patients.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Feb. 14th.—10 A.M., Mr. W. E. Tanner: Surgical Out-patients. 2 P.M., Dr. A. J. Whiting: Medical In-patients. 2.30 P.M., Mr. E. Gillespie: Surgical Operations. Mr. J. B. Banister: Gynæcological Out-patients. Dr. J. B. Alexander: Medical Out-patients. 4.30 P.M., Clinical Demonstration:—Mr. W. E. Tanner: Selected Surgical Cases. 6 P.M., Dr. F. L. Provis and Mr. T. H. C. Benians: Venereal Department.

TUESDAY.—9.45 A.M., Lieut.-Col. R. H. Elliot and Mr. N. Fleming: Eye Operations. 2.30 P.M., Mr. H. W. Carson: Surgical Operations. Mr. C. H. Hayton: Diseases of the Throat, Nose, and Ear. Dr. Metcalfe: X Ray Department. 4.30 P.M., Clinical Demonstration:—Dr. A. J. Whiting: Innocent Irregularities of the Heart. 5.30 P.M., Dr. C. E. Sundell: Children In-patients.

WEDNESDAY.—2 P.M., Mr. C. H. Hayton: Throat Operations. 2.30 P.M., Dr. W. J. Oliver: Skin Department. Dr. J. B. Alexander: Medical Out-patients. 3 P.M., Clinical Demonstration:—Dr. W. J. Oliver: Cases of Skin Disease. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

THURSDAY.—2.30 P.M., Mr. N. Fleming: Eye Out-patients. Dr. A. J. Whiting: Medical Out-patients. Mr. H. W. Carson: Surgical Out-patients. Mr. J. B. Banister: Gynæcological Operations. Dr. J. Metcalfe: X Ray Department. 3 P.M., Clinical Demonstration:—Mr. H. W. Carson: Selected Surgical Cases.

FRIDAY.—2 P.M., Mr. Howell Evans: Surgical Operations. 2.30 P.M., Dr. C. E. Sundell: Children Out-patients. Mr. E. Gillespie: Surgical Out-patients. 3 P.M., Clinical Demonstration:—Mr. T. H. C. Benians: Diagnostic Methods of Clinical Pathology. 5 P.M., Dr. Provis and Mr. Benians: Venereal Department.

SATURDAY.—3 P.M., Mr. H. W. Carson: Surgical In-patients.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, W.C. 1.

MEDICAL SCHOOL.

MONDAY, Feb. 14th.—2 P.M., Out-patient Clinic: Dr. Collier. 3.30 P.M., Lecture:—Dr. Kinnier Wilson: Old and New Afferent Systems.

TUESDAY, Feb. 15th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Lecture:—Dr. Collier: Acute Polyneuritis.

THURSDAY, Feb. 17th.—2 P.M., Out-patient Clinic: Dr. Farquhar Buzzard. 3.30 P.M., Dr. Taylor. Lecture Room. Demonstration of Cases.

FRIDAY, Feb. 18th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Dr. Tooth. Lecture Room. Demonstration of Cases.

Fee for Post-Graduate Course £7 7s. C. M. HINDS HOWELL, Dean.

KING'S COLLEGE (DEPARTMENT OF SCIENCE), Strand.

Nine Lectures on Problems of Modern Science.

WEDNESDAY, Feb. 16th.—5.15 P.M., Lecture (V.):—Prof. W. T. Gordon: Geology.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Feb. 17th.—4 P.M., Lecture:—Dr. Cockayne: Myopathy.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.

MONDAY, Feb. 14th.—5.30 P.M., Post-Graduate Lecture:—Dr. R. Wells: Irregular Heart Action.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square, W.

Post-Graduate Course on Infant and Child Welfare.

TUESDAY, Feb. 15th.—10.30 A.M., Dr. E. Pritchard: Practical Demonstrations on the Management and Feeding of Infants and Young Children—Demonstration IX., Treatment of Minor Ailments.

THURSDAY.—3 P.M., Demonstration X., The Training of the Motor Functions of the Digestive System.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE CLINIC.

TUESDAY, Feb. 15th.—4.30 P.M., Lecture:—Dr. F. E. Tylecote: Lumbar Puncture and its Value in Diagnosis.

SALFORD ROYAL HOSPITAL AND ANCOATS HOSPITAL POST-GRADUATE DEMONSTRATIONS, at the two Hospitals alternately.

THURSDAY, Feb. 17th.—4.30 P.M., Mr. Smalley: Importance of Early Recognition and Treatment of Nasal Sinusitis. (At Salford Royal Hospital.)

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURE, at Whitworth-street West Branch.

FRIDAY, Feb. 18th.—4.30 P.M., Mr. Morley: Acute Intestinal Obstruction in Infants.

MANCHESTER BABIES' HOSPITAL.

Post-Graduate Lectures and Demonstrations in the Onward Buildings, Deansgate, or at the Hospital, Slade-lane.

SATURDAY, Feb. 19th.—3.30 P.M., Dr. Renshaw: Congenital Syphilis. (At Onward Buildings.)

MANCHESTER FRENCH HOSPITAL POST-GRADUATE LECTURES, 24, Acomb-street, Whitworth Park.

THURSDAY, Feb. 17th.—4.30 P.M., Dr. N. C. Haring: Some Chronic Lung Diseases.

Communications, Letters, &c., to the Editor have been received from—

A.—*Answers*, Lond., Editor of; Association of British Chemical Manufacturers, Lond., General Manager of; Mr. R. J. Albery, Lond.; Dr. D. K. Adams, Glasgow.

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Notes, Short Comments, and Answers to Correspondents.

THE WORK OF THE METROPOLITAN ASYLUMS BOARD FOR THE MENTALLY DEFECTIVE.[1]

BY THE VERY REV. CANON SPRANKLING,
CHAIRMAN, METROPOLITAN ASYLUMS BOARD.

THE Metropolitan Asylums Board were required by an Order of the Local Government Board dated April 2nd, 1897, to provide accommodation for Poor-law children "who by reason of defect of intellect..... cannot properly be trained in association with children in ordinary schools." It is of some historical interest to trace briefly the steps taken by the Board to deal with these children.

The Children's Committee (the Central Committee appointed by the Board to deal with cases under the Order of 1897) decided that it would be well to proceed experimentally by providing accommodation in ordinary dwelling houses scattered over the London area, each in touch with one of the special schools provided by the London County Council; at one time there were actually five such homes in existence, the first having been opened in January, 1899. The object was to provide the children with something as nearly akin as possible to the home life of a normal London child, and a house-mother was appointed for each home. The children attended the local special schools, and in some cases considerable improvement was effected. In 1906 provision was found necessary for continuance of control over the children after they reached the age of 16. The Bridge Training Home at Witham in Essex was opened as a working colony for male patients, while High Wood School, Brentwood, which is an institution built on the cottage home principle, had one of the groups of cottages, containing 60 beds, allocated for the accommodation of the elder feeble-minded girls. In 1911, however, the Board referred the whole question of systematic reclassification and treatment of the mentally defective cases, which fell within their sphere of work, to a special committee, who came to the conclusion that the experiment now under discussion had, in spite of all efforts, met with little success. The Committee formed the view that the permanent retention of the majority of the feeble-minded children was necessary in the interests of themselves and of the community, and that by this very fact the desired results could be obtained with as great efficiency in large colonies as in small scattered homes, and much more economically. Recommendations were submitted which led to the placing of all mentally defective persons in the Board's institutions, including the children already referred to (who were not certified under the Lunacy Acts) under the care of the Board's Asylums Committee.

Provision of Certified Accommodation for the Mentally Defective.

The passing of the Mental Deficiency Act, 1913, as it did not place on the Board any duties in regard to the provision of accommodation for mental defectives, did not immediately alter the policy which had been pursued in the past. In May, 1914, however, the Board were approached by the local authority for the metropolis (the London County Council) with a view to their providing certified accommodation under Section 37 of the Act for certain classes of the mentally defective. While the matter was under consideration war broke out; the situation became so altered that the Board felt themselves unable to enter into an agreement such as was suggested. Two years later, however, an opportunity arose for the resumption of negotiations at the instance of the Board of Control and of the London County Council. Ultimately it was arranged that five of the Board's institutions should be certified for the treatment of cases under the Act of 1913, the whole to form a group known as the Metropolitan Asylums Board Certified Institution. Darenth Training Colony and Bridge Training Home were to receive improvable juveniles, Leavesden and Caterham Mental Hospitals were to receive unimprovable adults from 16 years and upwards, and the Fountain Mental Hospital to receive idiot children. The Board made it perfectly clear that they could only undertake this work on special conditions. For instance, it was essential that they should have the absolute right to accept or reject any cases so that in no way should their normal work be jeopardised, and that, further, owing to the existence in their institutions side by side of two classes of certified cases, it would be impossible to follow all the prescribed forms required under the regulations laid down by the Board of Control. There were other stipulations such as a provision that patients might be transferred by the Board from one section of the certified institution to another without the consent of the Board of Control, and also that patients should be treated in precisely the same way as the Poor-law cases received under the Lunacy Acts. The general idea was that the Board might be able to accept something up to 500 mental defectives from the London County Council area and from the Home Counties, with perhaps a few from provincial areas. In 1918, all arrangements having been made, the first cases were admitted.

To-day the Board have about 1000 mental defectives under their care, having thus exceeded by 100 per cent. the utmost promise they were able to hold out in 1917, but the available accommodation and the demand for it are now more or less equalised. Circumstances have rendered it necessary or desirable to depart in a measure from the original arrangements as to the classes of cases to be received at the different institutions. So far as Darenth is concerned, there has been, indeed, no change whatever, cases sent there being all of the trainable class, but it has been found that there are a goodly number of lower-grade cases who, while not prima facie likely to benefit by the special form of instruction given at Darenth, may yet be considered as a separate class from the unimprovable adults it was originally intended should be sent to Leavesden and Caterham.

So impressed were the Board in 1919 with the pressure on the accommodation provided at the Fountain for the most deeply defective cases (it being understood that the Fountain was, in fact, the only institution of its class in the country) that they proceeded to make arrangements for the provision of accommodation for unimprovable children of both sexes at Leavesden Mental Hospital, in upper wards where only the less robust and physically vigorous could be accommodated; thus this provision only slightly relieved the demands on the Fountain.

Training of Patients in Simple Occupations.

Early this year, however, the congestion had again become acute in certain directions; medical superintendents of the various institutions were consulted and the opinion was expressed that there might be found at Darenth a number of cases which after reasonable trial were not "trainable" in the sense given to that word at Darenth, but still were not "unimprovable" in the sense applied to that word at Leavesden and Caterham. It was decided to examine the records of the male patients at Darenth with a view to transferring all those who fell into this category to Caterham, there to be segregated as far as possible and employed in simple trades such as wood-cutting, land work, laundry work, &c. The idea was that if these cases were found to be susceptible of a higher degree of training in any particular industry, steps would be taken to provide facilities for such training at Caterham. Further, the advantage of transferring cases which were not likely to benefit to the fullest extent from the specialised accommodation at Darenth was obvious, seeing that at that time there were about 180 cases of mental defectives awaiting admission to Darenth all classed as "trainable." Thus, the first considerable change in the original arrangements for the reception of mental defectives was made, a change which seems to mark a step forward in the classification of these cases. To-day a number of the patients thus transferred to Caterham from Darenth are engaged in industries (such as carpentry) with what is looked upon by the medical superintendent as a remarkable degree of success. The system adopted has been to start classes of three or four pupils in a very small way without any idea of "forcing the pace" or aiming at output. The patients are encouraged to play at their work in the first place. When they become interested and begin to understand how to use, for instance, a hammer and a nail, they are allowed to make some simple object which will be of use and which they know will be of use. There are classes also in mat-making and tailoring, but it will be understood that the whole scheme is, at the present time, in embryo, and that it is too soon to suggest any very reliable inferences as to its future possibilities. I should say in passing, however, that a similar scheme is being adopted on the female side at Caterham among the young women, who are being trained to do more than had hitherto been done there in the way of needlework, rug-making, and so on. Results of these experiments are being carefully watched. The next step was to make further use of the vacant male adult blocks at Caterham by transferring thither the elder boys at the Fountain who had reached the age of about 9 years, and were found more suitable for male than for female nursing. A block was therefore prepared at Caterham and all the boys were transferred last spring.

An interesting feature of this change was provided by the statement made to the Board by the responsible medical officers that it was hard to say that any child was quite "unimprovable," and that it was in fact more correct to say that nearly all the cases at the Fountain hitherto

[1] Being the substance of a paper read on Nov. 26th, 1920, during the Conference on Mental Deficiency and Special Schools at Church House, Westminster.

considered hopeless were trainable to a greater or lesser degree. It was decided in future to reserve the Fountain for unimprovable boys under the age of 9, for unimprovable girls up to the age of 16, and for children of both sexes whether stated to be "trainable" or not up to 7 years. The reason for this change was that it was felt that there was need for a testing institution at which children could be observed so that their capacity might be more or less accurately measured before they were sent to Darenth. Previous to this arrangement all children of whatever age who were stated to be "trainable" had been admitted direct to Darenth, but it was found that so many were not really "trainable" in the Darenth sense that the accommodation there became as it were choked with cases which were not suitable, and which could not benefit by the specialised arrangements provided. On the other hand, the children admitted to the Fountain as unimprovable had, in some cases at any rate, been found to be so far superior to the original estimate of their capacity as to be suited for Darenth. At present, therefore, all children under 7 are admitted to the Fountain, where they are carefully watched, and after a longer or shorter period the medical superintendent of that institution consults the medical superintendent of Darenth with a view to the admission to the latter colony of all those whom experience has shown are "trainable."

Christmas Toys for Sick Children.

This procedure of selection is, as a matter of fact, merely carrying into the working of the Mental Deficiency Act the scheme which has worked well in connexion with Lunacy Act cases. So far no use was made of Bridge Training Home under the Mental Deficiency Act. Cases there are all uncertified. Apart from school training at Darenth a very large number of industries are carried on; and the Metropolitan Asylums Board actually relies to a considerable extent for the toys provided every Christmas for the children in their hospitals upon the workshops at Darenth which make these toys from waste materials of all kinds. Leavesden Mental Hospital has been as far as possible turned into an infirmary for the harmless imbecile classes and to a large extent its inmates are Lunacy Act cases. The mentally defective children housed there are practically all paralysed or helpless, and, while everything possible is done for them, their infirmities are so many and so overwhelming that it is hardly possible to give them any instruction or training. But these cases are not to be taken as disproving the view that few cases can truly be spoken of as "unimprovable."

At the Fountain Mental Hospital the very lowest grade of idiot children is provided for, the common types admitted being the helpless, paralysed, and epileptic. It became evident soon after the hospital was opened that as many of these children were trained to feed and dress themselves, and in other ways become clean and even tidy and useful, some higher form of training might be attempted. To this end a school was started in 1917, a suitable teacher-nurse being selected to take charge of the children. She started by teaching them how to play, and gradually advanced them through elementary kindergarten work, musical drill, and singing with action songs and dancing, to doll-making, mat-making, and the dressing of dolls. This simple instruction may not appear to mean much, but in practice it is found to be economical in many ways, and, above all, the lives of these unfortunate children are made much brighter and happier. Every care is taken to select suitable nurses who are specially interested in children, and over them are fully trained sisters who work in conjunction with the matron and her assistant. After the children have been to school for a certain period they are subjected to special tests periodically by the medical officers with a view to selecting the best for further intensive training at Darenth.

No one who sees the children as they are on admission can fail to be struck with the remarkable change achieved in most instances after a comparatively short period. The patience and care lavished on these afflicted atoms can hardly be appreciated except by those who watch the work of the institution constantly.

I need scarcely say, in conclusion, that the Board are well aware of the splendid work done under Section 37 of the Mental Deficiency Act, by boards of guardians and combinations of boards of guardians at Monyhull Colony and elsewhere.

EXPERIMENTAL GIGANTISM BY FEEDING WITH PITUITARY GLAND.

WHEN growth continues beyond the normal size of the species the condition is known as gigantism. Clinically, evidence points to the conclusion that at least one form of gigantism is due to over-function of the pituitary gland. Attempts, however, to produce gigantism by feeding with pituitary have not hitherto been successful. E. Uhlenhuth, of the Rockefeller Institute, has continued his researches and has now succeeded in producing experimental gigantism. His experiments were made on salamanders, and the experiments showed that it is the anterior lobe alone of the gland which possesses the ability of maintaining growth after the normal size of the species is reached. The function of the posterior lobe is still unknown, since it is the intermediate part which supplies the extracts which excite unstriated muscle, produce diuresis, and raise blood pressure. The effect of the anterior lobe diet depends on the developmental stage of the salamander. Larvæ do not respond to it; the growth-promoting effect of the gland commences only after metamorphosis has taken place. Specimens of *Amblyostoma opacum* have been kept and measured for several years. After the first year the animals grow very little. The largest control animal in one group measured 115 mm., while the largest hypophysis-fed animal measured 138 mm. In another example the normal typical animal, 3 years old, measured 111·5 mm., and the corresponding control 131 mm. at 2 years of age. The feeding was begun after the animal was 1 year old. Similar results were obtained on the species *A. tigrinum*. Every single animal of this species fed on the anterior lobe outgrew all the controls and other normal animals raised in the laboratory. If the animals were fed on the posterior lobe growth was not only not stimulated, but even greatly retarded. Feeding with the anterior lobe causes: (1) a very marked acceleration of growth; and (2) a continuation of growth beyond the specific size of the species, resulting thus in hypophysis or pituitary gigantism. It is impossible to renew growth by feeding with large quantities of normal food after growth has practically come to a standstill. The continuation of growth beyond the normal size of the species is not due to an increased amount of food, and it would seem that at a stage where growth ceases or is greatly diminished under normal conditions cell proliferation can be actually enforced by the specific growth-promoting substance contained in the anterior lobe of the hypophysis.

THE BOLSHEVIST UNIVERSITY OF SARATOFF.

AT Saratoff, on the Volga, has been established the first free scholastic and socialistic University, of the ordinances of which the Italian journal, *Patologica* (xiii., 291, Jan. 1st, 1921, 3) reproduces the salient points. The aims of the University are apparently (1) to give the proletariat a communistic conception of the world based on rigorously scientific data; (2) to initiate the proletariat at the earliest possible moment into all the most recent discoveries of science by inducing it to seek ever new scientific paths; (3) to explain to the masses the intimate connexion between the so-called exact sciences and practical life; (4) to excite in them not only a burning zeal for knowledge but for action also; (5) to direct them towards creative activity on a scientific basis; (6) to guide, train, and attract towards activity creative of social reconstruction the more capable proletarian elements; (7) to create institutions qualified to develop in the citizens aspirations towards self-culture.

Systematic and special lectures have been organised, together with work in laboratories, scientific departments, libraries and museums, and scientific excursions will be undertaken. All citizens of both sexes over 16 years of age who can read and write may attend the University, and the students are divided into groups in accordance with (*a*) the state of their preparatory work and mental development; (*b*) their predilection for one or other branch of science; (*c*) their reference to some particular psychological type as determined by the application of tests.

The syllabus of instruction comprises (1) the Universe (Cosmology), (2) Man (Anthropology), and (3) Human Society (Social Sciences). Since the aim of the University is not only the development of the intellect but also the development of character, the fundamental principle of the socialistic University is the self-education of the students. To this end the University has organised a series of lectures on the development of the will power by auto-analysis (systematic self-observation) and by some degree of practical instruction applied by the student to himself. To make the teaching more homogeneous and to link up all the subjects taught, a chair of Methodology (the first in an institution of this type) has been created for the purpose of unifying the separate lectures and making them conform to the fundamental programme of the University—the attainment of a vast communistic interpretation of the Universe. The course will extend over two or three years and the lectures will be given during three hours on three or five evenings every week. In association with the University are libraries, laboratories, museums, excursion and information departments and means for liaison with other similar organisations. When every citizen possesses not only general knowledge but also a scientific grounding, is able to think and speak, to make scientific generalisations and researches, to think for himself and to illumine scientific concepts with the facts of daily life, the world should be a very different place.